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POPULAR Computing WEEKLY

Software survey for Amiga 500

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NEWS DESK

Mastertronic and Hewson in budget software deal

GAMES

The nuclear threat: High Frontier vs Armageddon

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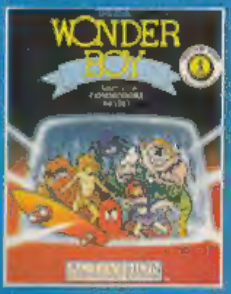
ATARI COMMODORE SPECTRUM

SPECTRUM COMMODORE AMSTRAD ATARI

WOOLWORTHS TOP 30 COMPUTER SOFTWARE



AUGUST 1987

POSITION	TITLE	SOFTWARE HOUSE	MACHINE TYPE	PRICE
1.	Last Ninja	System 3	CBM	9.99
2.	Barbarian	Palace	Spectrum	9.99
3.	Enduro Racer	Activision	Spectrum	9.99
4.	Wonderboy	Activision	Spectrum	9.99
5.	6 Pack	Elite	Spectrum	9.95
6.	Barbarian	Palace	CBM	9.99
7.	Paperboy	Elite	Amstrad	8.95
8.	6 Pack	Elite	CBM	9.95
9.	Wonderboy	Activision	CBM	9.99
10.	World Class Leaderboard	U.S. Gold	CBM	9.99
11.	Army Moves	Ocean	Spectrum	7.95
12.	World Games	U.S. Gold	Spectrum	8.99
13.	Road Runner	U.S. Gold	Spectrum	8.99
14.	F15 Strike Eagle	Microprose	Spectrum	9.95
15.	Gauntlet	U.S. Gold	Spectrum	8.99
16.	Big 4	Durrell	CBM	9.95
17.	Game Over	Ocean	Spectrum	7.95
18.	Metro Cross	U.S. Gold	Spectrum	8.99
19.	Road Runner	U.S. Gold	CBM	9.99
20.	Leaderboard	U.S. Gold	Spectrum	9.95
21.	Game Over	Ocean	CBM	8.95
22.	Living Daylights	Domark	Spectrum	9.95
23.	Trio	Elite	Spectrum	9.95
24.	Konami Coin Op	Imagine	Spectrum	9.95
25.	Living Daylights	Domark	CBM	9.95
26.	Trio	Elite	CBM	9.95
27.	Paperboy	Elite	Spectrum	7.95
28.	Konami's Coin Op's	Imagine	CBM	9.95
29.	Quartet	Activision	CBM	9.99
30.	6 Pack	Elite	Amstrad	9.95

WOOLWORTHS

A Great Deal in Entertainment

VISA

* At selected larger stores. Masterbrand games at £1.99 and £2.99

* Items subject to availability

COMMODORE SPECTRUM AMSTRAD

August 7–13

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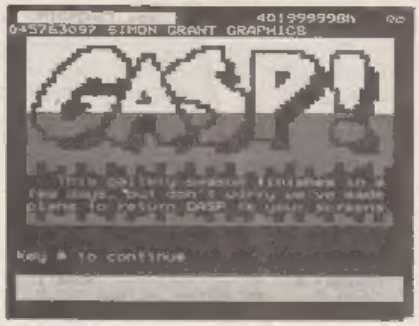

Top: Micronet's gallery pages, explored this week by David Wallin. Above: The Amiga 500 – the software is coming. Below: Eagle's Nest from Pandora.

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13 News Analysis The home computer industry traditionally has a bad time during the summer. Around this time, the casualty rate as companies bite the dust is high. Just why does this remain a problem? Christina Erskine reports.

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33 Soundcheck Mark Jenkins answers readers' musical queries and reports on the release of Kuma's K-Minstrel for IBM PCs and compatibles.

Features

14 Amiga software Amid the lengthy debate on 16-bit machines in general, the Amiga's 'lack of software' has been perceived as a drawback. On a more positive note, Amiga owner and enthusiast Barbara Conway reports on software that *is* available and recommends some packages for new owners.

17 Desktop Publishing Software companies have become very excited about dtp this year, with new packages coming out every week. In a two part feature, we take a cool look at what the dtp package for the home micro can do, what it can't do, and some alternative products that may suit your needs better.

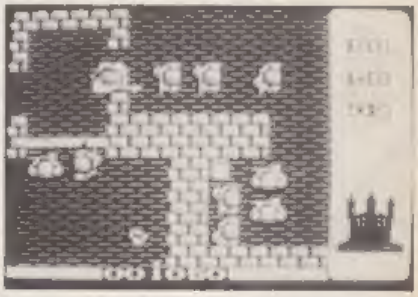
Programming

21 Learning Lisp Kenn Garroch begins a new series on the language Lisp, originally devised as an artificial intelligence tool. Over the next four weeks, Kenn will explain the features and capabilities of Lisp, and show you how to get started with the language.

23 Listings Hints and tips on machine code programming on your Spectrum, a file verifier for Amstrad CPCs, and improving program execution plus a singlestep feature for the C16/Plus 4. For the BBC, we have a comprehensive range of disc utilities – everything you ever wanted to do to your disc, but were afraid to try. Commodore 64 owners get some light relief this week with the 100% machine code Space Blaster.

29 Bytes and Pieces Short routines for you to type in.

30 Peek and Poke Kenn Garroch answers your programming queries.



Games

41 New Releases Your complete guide to all the games released this week, including *Black Magic* from US Gold/Datasoft, the Atari ST version of Pandora's *Eagle's Nest* and yet another new Infocom adventure, *Lurking Horror*.

Plus, we look at two new games, *Armageddon Man* from Martech and *High Frontier* from Activision, with a nuclear war theme – both serious strategy games rather than shoot 'em ups, thankfully.

Editor Christina Erskine **News editor** John Brissenden **Features editor** Cliff Joseph **Technical editor** Duncan Evans **Production editor** Michelle Beauchamp **Marketing and Advertisement manager** David Osen **Advertisement executive** Athena Peerman **Classified manager** Susannah King **Classified executive** Robert Cole **Editorial secretary** Annmarie Allan **Administration** Carol Frith **Credit control manager** Gabriella Piscina **Managing editor** Peter Worlock **Publishing director** Jenny Ireland **Published by** Sunshine Publications Ltd, 12-13 Little Newport Street, London WC2H 7PP. Tel 01-437 4343 Telex 296275 Fax 01-439 0681 **Typeset by** Magazine Typesetters, 6 Parnell Court, East Portway, Andover, Hampshire. **Printed by** McCorquodale Magazines, Andover, Hampshire. **Distributed by** S M Distribution, London SW9, Tel 01-274 8611, Telex 261643.
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ABC

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LETTERS

Transforming technology

The recent developments in new technology has been astounding with the variants of 16 and 32-bit technology. These are the Risc and Transputers which are being developed by British companies.

The parallel processing area is of most interest to me as I have just acquired a copy of the *Inmos Transputer Reference Manual*. After reading a couple of pages of this manual the idea and implications become mind blowing.

The idea is that the program is the hardware and a process can be implemented as a piece of hardware. However, I gather that there are three types of chip. The C001 (28 pin DIP package) and C002 (24 pin DIP package) which are support chips, the T414 (84 pin package) is a computer in itself.

To increase memory and speed on a micro based on this principle just add a transputer, which costs £400.

As it stands when this takes off the ground, the large mainframes should be surpassed by a computer no larger than an IBM AT. If Risc was combined, artificial intelligence should be round the corner, although artificial intelligence could be round the corner after the transputer takes off.

With the state of digital electronics nearly at its boundary of operating speed and high probability of faults, laser computers will be the next step in technology.

But laser computers cannot go as far as electronic computers. This is because the source of power for them is electricity, and motors, etc, will require electronics to control and drive them.

M R J Gendon
Norwich

Stop acting like children

Enough is enough. A plea to the many thousands of readers of this August magazine and to the editor of the letters page. The plea is to stop this destructive sibling rivalry emanating from both Atari and Amiga owners alike.

Their puerile diatribe has been given more than enough coverage in this magazine and any extended dissection will prove fruitless. If you are one of those people reading this, then shame on you, any intelligent person will tell you that the perfect computer has not and will not be made.

I can fully understand the impassioned cries from people who have forked out several hundred quid for a computer and see it being knocked continually by biased and uninformed reporting. The purchase of this magazine must surely mean you have a wider interest of computing in general, rather than concentrating solely on your own machine.

For every new computer that springs up of late a host of dedicated magazines follow or, in the case of the Amstrad PC, precede, so reserve your pathetic adolescent ramblings to these comics.

Now there are some computer users that don't have dedicated magazines for their particular machines and likewise there are thousands of users who like to keep abreast of current developments in the world of computing hence the purchase of general computing mags.

To the readers, send your letters about hints and tips that you have discovered, so we can all benefit and learn more about your pride and joy.

To the editor of this mag, continue to be objective and unbiased in reporting on new equipment, demand review machines and software to check out the spurious claims of the manufacturers and please check out the press handouts for accuracy.

By the way, I use a PC, Amiga, C128, and a Digital PDP mini, all of which have their own special qualities. If any generous person out there has a surplus Cray then lob it my way!

John Broad
Editor, UK Amiga Users Group

Microdrive outlet

I agree with G O Davies' comment "there doesn't seem to be much on Microdrive . . .", (*Popular Computing Weekly* – Letters, July 24). However, the 'drives are still selling and will survive for some time yet because of products like Multiface which allows for easy transfer of tape-based software to cartridge.

"Come along now sir! You'd like to upgrade your C64 to an Amiga, wouldn't you?"

At Chezron Software we remain enthusiastic about the Microdrive system which in spite of some shortcomings can still astonish people when they see it is possible to have a program up and running and in use whilst the person sitting next to you is still scratching about with the Desktop on the ST – will this start a whole new debate? *(It had better not, Ed).*

We are about to launch *Outlet* – a new monthly cartridge-based magazine (containing over 100K of material) which is purely for Microdrive owners and will only cost £1 if users provide their own cartridge. If Mr Davies cares to contact me I will be pleased to send him a complimentary copy.

Ron Cavers
Chezron Software
605 Loughborough Road
Birstall, Leicester

A present for Commodore

A few weeks ago I bought *Machine Lightning* from Oasis software as a present for my Commodore 64. I have been happily using the assembler since then with no problems. I decided to be a bit more ambitious and tried to load the sprite generator program *Sptgen*.

The disc drive reported that it could not find a sector on the disc. Using *Disc Revealed* I discovered that a sector was allocated but not written to, so part of the program was missing. I have managed to link across this missing section by altering the previous next sector parameter, thus jumping over the offending sector.

The program now loads perfectly except that I am missing about five lines of program.

I wrote to Oasis software at the address given at the start of the demo program but my letter was returned with 'gone away' written across it.

If I could make a request to the other readers who may have this program to supply me with the data that should be in lines 50110 to 50160 of *Sptgen* I would be forever in your debt.

Miss Marion Tuck
Hove, East Sussex

Flink the QL Fink

Help! I am a QL user whose main interest is computer graphics (which probably means I need psychiatric help anyway).

I bought *Popular*, January 15 this year and typed in a program called Fastline by David Perry.

After running the thing, I found that not all the commands listed with the program would work. FLINK and FLINE R returned a not found error.

After fiddling I got FLINK to work by using its correct call name FINK, but to this day, I can't get anything out of FLINE R.

I'd be grateful if anyone who has got it to work – perhaps David Perry himself – could get in touch and let me know how to do it. I've rechecked my data 17 times, so please don't suggest that.

Also, does anyone know of a collision detection program for wire frame graphics, preferably on the QL.

D A Elgee
61 Leamington Road
Blackpool, Lancs

Use that Speakers Corner

Please would you reject and consign to the out tray any further references to the ST/Amiga debate.

I, like so many others, have no interest in the futile mumblings of computer one-upmanship.

Most of us use computers for real world applications and wish to read about hints and ask for advice to make our machines do what they couldn't do before.

That's the reason for a letters page, so let's get back to that purpose and if necessary, set up a soap box at Speakers Corner for the Atari/Commodore users to voice their opinions.

I will happily supply the tomatoes.

Mike Waterfall
Redruth, Cornwall

PS Einstein users in Cornwall: ring me on 0209 218410 with a view to setting up the Cornish Einstein users group.

The feminist issue

I always knew that computing was a male-dominated field, but Cliff Joseph has struck a new low blow for anti-feminism.

In Software Hotlines, July 17, he informs us that the game, *Rebel*, has a female hero! Obviously, this is the first move in a campaign to wipe nasty feminist words, like heroine, out of the English language.

The nest step will probably be a new national anthem, God Save Our Female King!

Margaret Griffiths
Poole, Dorset

Cliff Joseph replies: Nobody questions my liberal credentials and gets away with it.

I specifically used the word 'female' for emphasis; to stress that the game had a female character in it, rather than the usual macho Rambo nonsense.

"Female heroine" being tautologous, I used "hero" instead. With hindsight, "female protagonist" would have been better.

Computing in Malaysia

Sorry for the delay in writing this letter, but in my country we receive *Popular* two months after the published date.

In your Letters column, May 8, Benny Bosmans of Belgium mentioned that the Macintosh software emulator for the ST is available in Germany.

Since we, the ST users in Malaysia are keen on the Macintosh emulator, I would be grateful if you could give me the address of the developer/programmer, so that we could make further inquiries about the software.

The reason I prefer the software emulation is largely due to the import tax imposed on computer hardware in Malaysia, and furthermore I think that the Data Pacific emulator does not satisfy my needs.

I have heard that an Amiga emulator is out in Germany. Do you know where I can obtain the details of the software?

Chia Chin Yau
459 Jalan B-11
Taman Melawati, Kuala Lumpur

The only Macintosh emulator for the ST that we know of is the Data Pacific package, published under the name *Magic Sac* in the USA and as *MacEmulator* in the UK.

We're pretty certain that producing an Amiga emulator for the ST would be an impossible task and doubt that such a product exists.

Perhaps one of our German readers could clarify the situation over emulators available in Germany and help out Chia Chin Yau.

Queen moves to safety

In Game One of our readers' versus *Colossus* chess tournament, the readers, playing black, moved as expected, bringing their rook to open d-file attacking *Colossus's* queen.

Colossus has now moved its queen to safety on c3.

The next move

What do you think would be the readers' best move now?

Send your suggested move to *either* Inter-Mediates (*Popular* Chess), Freepost, Sawbridgeworth, Herts CM21 9YA (no stamp needed), *or Popular* Chess, Unit 2, The Maltings, Sawbridgeworth, Herts CM21 0PG (with a stamp). If you use the Freepost address, please send your entry in promptly; it often takes longer than first class mail.

Only one vote per person please, and all entries must reach either address by Wednesday, August 12.

The move which gets the most votes will be entered into the game. Results and *Colossus's* response will be published in two weeks' time.

Prizes

There are prizes to be won by entrants at the end of each game. A reproduction Arran chess set will go to the entrant who suggests most moves used in the game, and copies of *Colossus Chess 4* will go to the five most consistent entrants.

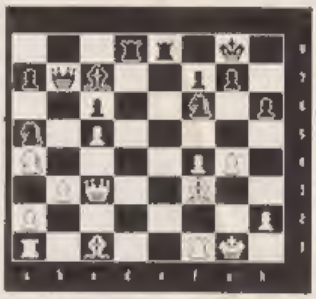
The games aren't over yet, so if you haven't started taking part already, there'll still be time.

Next week, we return to Game Two, where the readers are playing white.

Game One

The moves so far:

1	Pe2-e4	Pc7-c5
2	Ng1-f3	Nb8-c6
3	Bf1-c4	Ng8-f6
4	Nf3-g5	Pd7-d5
5	Pe4xd5	Nc6-a5
6	Bc4-b5+	Pc7-c6
7	Pd5xc6	Pb7xc6
8	Bb5-e2	Ph7-h6
9	Ng5-f3	Pe5-e4
10	Nf3-e5	Bf8-d6
11	Pd2-d4	Pe4-d3 (en passant)
12	Ne5xd3	Qd8-c7
13	Nb1-c3	Ke8-g8 o-o
14	Pf2-f4	Qc7-b6
15	Nc3-e4	Qb6-d4
16	Pc2-c3	Qd4-d5
17	Ke1-g1 (o-o)	Rf8-e8
18	Be2-f3	Qd5-b5
19	Pb2-b3	Bc8-f5
20	Pc3-c4	Qb5-b7
21	Pc4-c5	Bd6-c7
22	Pg2-g4	Bf5xd3
23	Qd1xd3	Ra8-d8
24	Qd3xc3	?



Hewson goes budget

HEWSON Software is joining forces with leading budgeteer Mastertronic to establish a new budget label, Hewson's Rack It, which will sell at £2.99.

Hewson has been planning the move for nine months, and the first eight Rack It titles will be released two at a time starting September 17.

The Hewson deal is the latest of a number of distribution contracts completed by Mastertronic recently, including Americana (for US Gold) and Ricochet.

Mastertronic marketing manager Rachel Davies explained the thinking behind the company's increasing collaboration with other budget operators.

"A lot of supermarkets, for example, will only stock budget software. Mastertronic is generally agreed to be the brand leader in budget sales. It makes sense that we handle other labels to give the consumer choice – it certainly doesn't conflict with our operation, and means we can offer our retailers a greater choice from one supplier," she said.

Hewson made it clear last week that the new label will be releasing only new titles, and all will carry the £2.99 price tag.

Full details are expected shortly, but the first eight titles are as follows: *Tunnel Vision* (C64); *Draft Genius* (Spectrum); *Anarchy* (C64); *Mr Wino* (Spectrum); *Proton* (C64); *Ocean Conqueror* (Spectrum); *Volant* (C64).

For Hewson, marketing director Debbie Sillitoe was enthusiastic about the company's entry to the budget market.

"At that price point, there wasn't a range of good quality product. We thought we'd have a go and be successful at it. We're trying to cater for a range of ages as well as different range of tastes," she said.

But the big question is why has Hewson chosen this time to enter the budget market – and will the company be deserting the full price market?

"We've obviously got a set deal with Mastertronic which gives us stability on the range," said Debbie Sillitoe. "We're looking towards developing 16-bit software, and this contract is something that's going to give us a fairly even turnover, and long-term stability."

Mastertronic is planning further similar arangements, and the next few months should see increasing numbers of full price manufacturers using the budget market as a way of financing 16-bit development.

Eidersoft baled out by PCML

EIDERSOFT was able to allay fears over its future last week, following a rescue bid from manufacturer PCML, one of Eidersoft's creditors.

The move, which is understood to have been agreed by all the creditors, involved a five-figure sum, according to Eidersoft managing director Ken Browning.

"Delays in software products and increased competition in the peripherals market-place had raised some concern over the future of the company, but with the help of PCML and the positive attitude of creditors Eidersoft has been given a new lease of life and a suitable cash injection," was the explanation offered in a company statement last week.

Eidersoft now plans to go ahead with all its planned software and peripherals releases, including ten software packages for the ST and PC between now and Christmas ST and Amiga add-on memory cards, and a new hard disc unit for the ST. The company also intends to move to Basildon Essex, shortly.

Independents for Palace

PALACE Software is launching a new label, Outlaw Productions, which aims to tap the independent programming sectors.

"There are now a number of highly skilled and professional development teams in existence.

"Our aim is to help them produce their best work and to market it using the skills and knowledge we have picked up over the last three years," said former Palace general manager Matthew Tims, who will be running Outlaw.

The first release will be a Commodore 64 *Shoot 'Em Up Construction Kit*, developed by Sensible Software. Outlaw claims that this will enable people with no programming experience to write games that would normally cost £10.

The kit includes four games, and will be available in the autumn, price £14.95 cassette, £19.95 disc. Tims explained that the kit is not really representative of future Outlaw titles.

"It's an exceptional thing, sort of midway between a game and a utility. Most of the other things will tend to be more traditional games. Future products will tend towards the £9 or £10 mark," he said.

L-R: Jonathan Hare, Matthew Tims and Christopher Yates

PSS joins battle of midway price games

PSS, the strategy/wargame specialist, is launching a new series of titles called Classic Conflicts.

The new series will include a mix of old and new products. The first three are re-releases of the controversial *Theatre Europe*, which has a nuclear war theme, *Battle for Midway*, and *Battle of Britain*. These will be issued on CPC, C64 and Spectrum.

A new title, *Power Struggle*, with a world domination scenario, follows and PSS, which recently became part of Robert Maxwell's Mirror Group, also plans to re-release back catalogue from other software companies in the Classic Conflicts series.

The range will be priced midway between budget and full price at £4.99 tape, £9.99 disc, all formats.

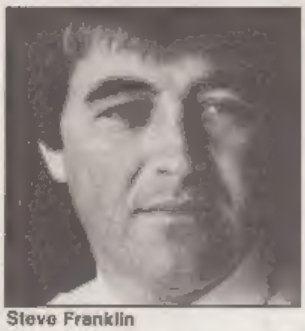
Commodore pulls all the stops on A500

COMMODORE is launching a massive effort to persuade existing Commodore owners to upgrade to the Amiga 500. It is writing direct to half a million registered users, offering them vouchers entitling them to £100 off the A500 or A1081 colour monitor, or £200 off the pair.

This reduces the cost to £473 inclusive for the A500, or £301 inclusive for the monitor. All Commodore dealers have been notified of the promotion.

"This offer will be highly attractive to users of the Commodore 64 and other Commodore computer owners who already know us and want to move up to a more sophisticated machine," said Tom Hart, national sales manager of Commodore's consumer division.

New Commodore UK general manager Steve Franklin hinted at the promotion in an exclusive interview with *Popular Computing Weekly* last month (see News Desk, July 24).



Steve Franklin

"The Amiga 500 is the next product up for long-term Commodore 64 users. The A500 is a very powerful home computer; the games are more sophisticated and the power lends itself to serious use," he said at the time.

The promotion marks the beginning of an aggressive promotional campaign for the Amiga, including TV and national press advertising.

Star printers cuts

STAR Micronics has announced price cuts for two of its dot matrix printers.

The NL-10, a nine pin model which prints at 120cps in draft (30cps in NLQ) comes down to £248, with a parallel interface, from £278.

The top of the range NB-15 prints at 300cps in draft mode and 100cps for letter quality. It has been reduced from £949 to £849.

Details from Star Micronics, Craven House, 40 Uxbridge Road, Ealing, London W5, 01-840 1800.

SOFTWARE HOTLINES IS ON PAGE 10

More for organisers

PSION has dropped the price of 64K and 128K Eprom Datapaks for its hand held Psion Organiser computer, and introduced 32K Rampaks for the Organiser II XP.

The new prices for the higher memory Eprom cartridges are £99.95 for 128K storage and £79.95 for 64K. The smaller cartridges remain at £19.95 for 16K and £34.95 for 32K.

The new 32K battery powered Rampak will cost £54.95. Users can write to Rampaks faster than Datapaks, and Rampaks draw very little power from the Organiser itself.

DIARY DATES

AUGUST

22 August
ZX Microfair
New Horticultural Hall, London SW1
Details: Latest innovations for Sinclair users
Price: £2.50/£1.50 on door, £1.50/£1.00 advance
Organiser: Mike Johnston 01-801 9172

SEPTEMBER

23–27 September
Personal Computer World Show
Olympia, London
Details: Latest hardware, software and peripherals for business and leisure computing
Price: £3, £2 – (parties over 10)
Organiser: Montbuild 01-486 1951

OCTOBER

15–17 October
Desktop Publishing Show
Business Design Centre, London
Details: Demonstrations of latest hardware and peripherals, plus seminars and user clinics
Organiser: Database Exhibitions, 061-456 8383

NOVEMBER

14 November
National Einstein Exhibition
National Motorcycle Museum, Birmingham
Details: Einstein software etc.
Price: 50p
Organiser: UKEUG (0473) 49507

Prices, dates and venues of shows can vary, and you are therefore strongly advised to check with the show organiser before attending. We cannot accept responsibility for any alterations to show arrangements.

NEW AM
NOW OTHER HOME COM

Amiga 500 is here.

With a mind-blowing array of features and capabilities.

And a £499‡ price ticket (ex VAT), hundreds of pounds less than anyone could have predicted.

"...a miracle of compression..." writes *Popular Computing Weekly** "...it all adds up to a formidable system which is clearly better than anything else at the price."

This elegant little machine takes family computing into new dimensions of creativity, excitement and productivity.

It outruns and outguns office PCs as a business multi-tasker, performing a deskful of different jobs simultaneously, at over 7 million steps per second in realtime.

So other home computers may not be the only machines it consigns to the toy cupboard.

AMAZING SCIENCE FACT!

Amiga is used by Disney, Universal and other Hollywood studios for its dazzling 3D graphics manipulation and animation powers.

A sophisticated high-speed graphics processor called a blitter chip transforms images in realtime.

You can paint the screen with more than 4,000 colours. Create and modify designs and effects as you like, with pin-sharp resolution.

You command an almost limitless workshopful of stunning professional graphics capabilities.

With an optional Genlock interface, you can capture images off videotape. Manipulate and mix them with graphics. Then re-transfer them to videotape!

This means you can produce spectacular special effects like those created by Amiga computers for Channel 4's *Chart Show* and the American TV science fiction series *Amazing Stories.*

YOU AIN'T HEARD NOTHING Y

Concealed within the slee Amiga shape, there is also a pro-quality sound synthesiser four-track stereo sound system.

Driven by another powerf and unique custom chip, it can synthesise musical instruments

‡Includes DeluxePaint from Electronic Arts worth £79 + VAT! (Excludes monitor or TV modulator.)

COMMODORE BUSINESS MACHINES (UK) LTD, COMMODORE HOUSE, THE SWITCHBACK, GARDNER ROAD, MAIDENHEAD, BERKSHIRE SL6 7XA. TELEPHONE: (0628) 770088. TELEX: 846057 CB

IGA 500.
PUTERS ARE JUST TOYS.

sond effects.

An optional digitiser allows yo to take onboard real sounds. M and modify the two. Translate yor compositions from keyboard to neet music. Play them back thugh the monitor's speaker or yor hi-fi.

Your Amiga can also synthesise the human voice.

It can speak back anything you care to write on the keyboard.

So this is one computer that can not only word process with faultless professionalism, and incorporate superlative graphics into the text, it can also read the text back to you aloud.

GAMESMANSHIP AND WORKMANSHIP!

The new Amiga 500, in fact, dumbfounds its competitors in every way.

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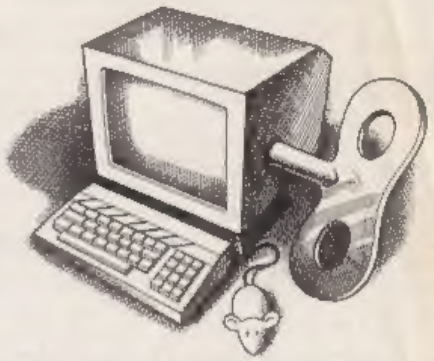

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Commodore

*Polar Computing Weekly, 22-28 May 1987. †Personal Computer World, February 1987. **Subject to availability.

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Budget titles get lion's share

BUDGET software is outselling full price titles during the traditional summer low season, according to Gallup, the market research company which compiles the industry's software charts.

However, this summer's 'slump' appears to be much less significant this year, with sales of all software increasing during July. Usually sales decrease considerably and do not pick up again until the end of September.

According to Gallup, "overall sales defy seasonal expectations and rise again".

The share of software sold between full price (£9 upwards) and budget (between £2 and £5) has been even, with full price titles slightly ahead for some months until Gallup's figures for the second week in July showing budget software exceeding 50% of all titles sold.

It is commonly held that poor summer weather is good for software sales, and vice versa. Certainly, with the exception of the last two weeks in June, this summer has so far been characterised by temperatures below the seasonal norm over most of the country.

Jim Darling, head of budget house Code Masters, thinks that the share of budget sales will continue to be larger than that for full price titles. "I think budget will be registering 60% by Christmas. It is making the position of full price companies even more difficult than it would be anyway.

"The future depends on whether full price companies take the bull by the horns – although software at £9–£10 will continue to sell, I'd try something like £4.99."

Many full price companies have been saying for some time now that they foresee a general drop in software prices next year, as the budget companies have become firmly established in the market.

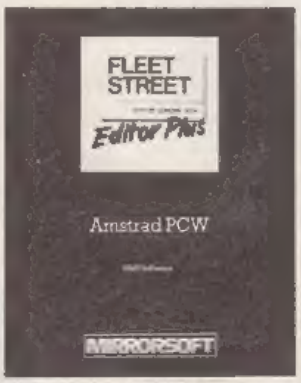
Turn to News Analysis, page 13.

Mirrorsoft goes on DTP attack

DETAILS of Mirrorsoft's autumn schedule emerged last week, and the company looks set to step up its attack on the business software market.

This month sees the release of enhanced versions of the successful desktop publishing packages *Fleet Street Editor* (PCs and compatibles) and *Fleet Street Publisher* (Atari ST). These will support CGA, EGA and Hercules graphics, and can also drive the *PostScript* page description language.

The new year will see further releases for the PC, including further desktop publishing programs and "word processor enhancements", according to Mirrorsoft marketing director Pat Bitton.



Fleet Street Editor Plus

This amounts to a major attack on the DTP market, with the announcement last month of a £100,000 advertiisng campaign for *FSP* and *FSE*.

SOFTWARE HOTLINES

Having been taken to task for referring to someone as a 'female hero', rather than a 'heroine' in recent Hotlines (see this week's Letters), I'm going to be very careful with what I say about this next game.

Athena is described by the people at Imagine as "a tigress from the arcades". The game is a conversion of the coin-op title in which the aforementioned heroine smashes her way through a vast scrolling landscape in a quest to rid the world of a host of mythical demons and monsters.

And I'm not going to say anymore about the game than that, apart from the fact that it will be available for Spectrum, C64 and Amstrad later this month.

It's a good week for monsters actually. US Gold is about to join in with *Survivor*, by Spanish outfit Topo Soft. Just for once, you play the monster and you get to munch a few humans – or rather you get to spit acid at them, since that's how your monster protects itself.

Your task is to penetrate a spacecraft and leave ten pods on board to ensure the survival of your race. And if you think that an acid-spitting monster leaving pods on a spaceship sounds a bit like the film *Alien*, then wait 'till you see the graphics.

Also on the way is a motley assortment of vampires and werewolves. Piranha, which seems to specialise in slightly off-beat games, have got *The Astonishing Adventures Of Mr Weems And The She Vampires*.

The PC goes to bat in *World Series Baseball*

Mr Weems is a failed accountant who makes a major career decision and becomes a vampire hunter. Armed with the garlic equivalent of a smart-bomb, you take Mr W into a haunted mansion in order to track down the great she-devil.

The game is programmed by the Ram Jam Corportation, which means that it's probably going to be worth a look once it's finished (and just as weird as it sounds).

And if fantasy games aren't their cup of tea then they can all get together and form a team for *World Series Baseball* which is due out from Ocean any minute now.

Infocom seem to have hit their stride again recently after a mild post-*Hitch Hiker's* lull, and their next planned release is the oddly titled *Nord and Bert Couldn't Make Head Or Tail Of It*.

Infocom has called its previous adventures 'interactive fiction', and claims that *Nord and Bert* is its first collection of 'short stories'.

The game consists of eight 'stories' that should only take a couple of hours each to complete, but instead of the usual brand of adventure these stories present you with a baffling collection of word puzzles.

It sounds as if it could be either a great success or a total disaster, but either way it sounds like something original.

Cliff Joseph

***Athena*: "tigress of the arcades"**

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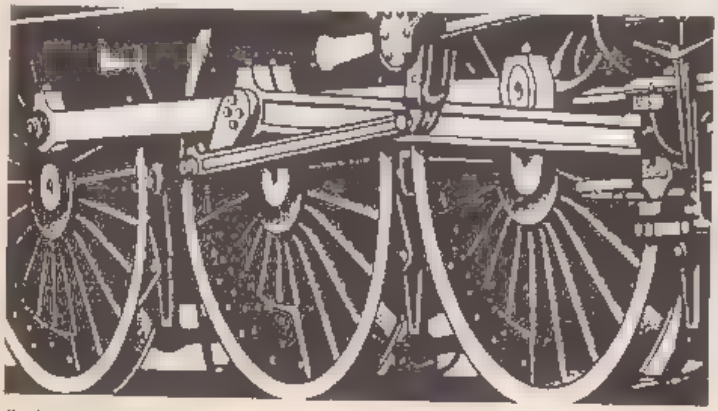

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NEXT WEEK

Desktop publishing

Part two of our feature on dtp looks at some more products, including *Publishing Partner* for the Atari ST, and explains further what you can achieve with a dtp package.

Games consoles compared

We promised this feature for this issue, but circumstances beyond our control meant it had to be postponed. Stay tuned . . .

Commodore mouse

AMS has finally made its mouse package available for the Commodore 64. See how it compares with the competition in our review.

WHS refuses 9512

UK retailers have made clear their response to the imminent arrival of Amstrad's new PCW9512 word processor, and the likely implications for the existing 8256/8512 models.

The future of the 8512, which has been unavailable recently, looks assured Ryman, which is almost certain to stock the new machine, revealed that Amstrad has sent the company a letter which confirms that the 8512 will be available again in "late September".

"We haven't had one for the past three or four months," said machines support manager Ian Tullis.

Meanwhile W H Smith has said no to the 9512. This follows its refusal of the Spectrum Plus and Cambridge Computer's Z88 portable

The news comes as a surprise to many, since the office equipment market at which the new machine is clearly aimed, appeared to be the natural market for W H Smith as well.

Current policy would appear to be to concentrate on the 16-bit games market in the form of the Atari ST, as hardware buyer Ian Laurie explained.

"It's in negotiation, but it's not a market we're into. We are aiming at the games computer market at the moment," he said

An Amstrad spokesman expressed surprise at the W H Smith decision He expected the new machine to be stocked by all the outlets that took the 8256/8512

Fly me, I'm Microprose

IT HAD to happen Microprose has bought an ex-US Navy plane, and will be using it in promotions and air shows. But "cheap promotional stunt" doesn't apply it cost $87,500 (about £55,000).

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Microprose US staff with the new 'plane

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THE SUMMER SLUMP

The seasonal nature of the home computer industry has claimed many casualties. Christina Erskine looks at some of the reasons why this should be.

s summer, it must be a lean for computer companies, ompanied by the sound of hivers going in across the ntry.

ome of the names have n auspicious; the last four mers have seen off com- es such as Imagine, Bug- , Carnell, Saga Systems, r Distribution, CSD (Cre- Sparks, Mikrogen), Rabbit, and Computers.

e extreme seasonal fluctu- s of the market are the one r force here. It's strange despite home computing's from 'latest leisure craze', 1983, to an established me, that those fluctuations still be there.

e majority of entertainment vare is sold between No- ber and February. That's lmas present buying, fol- for the time of year, according to Gallup, which produces the software charts used in this and other magazines.

Then there is the sheer (lack of) longevity of any one software title.

A games 'hit' lasts about three to six weeks in the UK, apart of course from the very big sellers. Subsequent conversion to other formats will extend the life a bit too.

As a sideline, a lucrative hit can fund program development to keep the standard up. Part of the reason why the market seems to be dominated by mediocre games is that the resources for hiring top programmers or spending time on design and coding just aren't there, or are all piled into the 'big Christmas licence'.

Exports keep many companies going. Most firms sell their software in Europe (pick up any copy of a French, German or Italian micro magazine and the screen shots will look oddly familiar), some in the US and further afield.

You can spend whatever you like on licences, the best programmers you can find, the snazziest packaging, and still miss release dates (anyone else thinking of *Star Trek* here?), fail to find one fatal bug, or simply fail to arouse the public's interest.

Easing the cashflow is one reason why so many companies have turned to budget labels to keep things ticking over. Games at £1.99 and £2.99 are generally 'impulse buys', and sales are not so concentrated into the winter months.

Of the hardware companies which have vanished, many suffered either directly or indirectly from the success of the Sinclair Spectrum in 1983 and 84, that was where all the software was going, and without software support no machine can survive. Machines like the Oric and Lynx were difficult to place in major retail outlets. Deemed to be comparable buys to the Spectrum, stores preferred to stock the latter instead not as well as. Saga Systems did well enough out of producing alternative Spectrum keyboards for as long as the Spectrum had a lousy keyboard. Once Amstrad had rectified that problem, Saga's market among new Spectrum owners disappeared.

The hardware market is no less seasonal than software. A micro priced at under £300 is Christmas present fodder too, and summer sales of micros have always been poor, hence the 'special offers' and bundles that appear each July.

The software that doesn't appear to suffer too badly from 'summer slump' is utility, applications and home business packages. Companies producing these also escape the 'six week hit' effect.

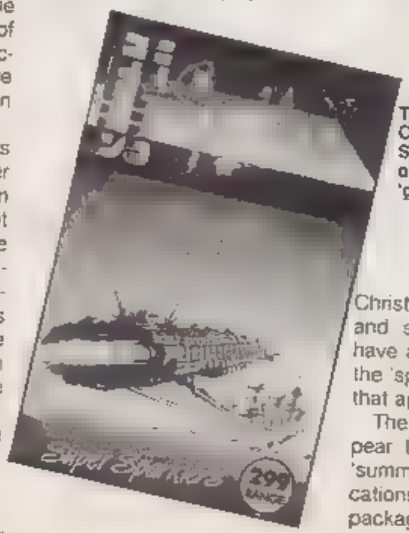
Their problem is that while a good word processor will carry on selling for months, maybe years, it could take that long to sell as many as the hit game.

If the company cannot build up a successful catalogue of long-selling products, or if new machines quickly make their utilities redundant, then they too will face financial difficulty.

The problem of seasonality at one end and specialised markets is the other shows no sign of abating.

For one thing, there are still too many games companies producing too many games to go round. The consumer has plenty of choice (though still not enough choice at the high quality level), but the vast majority of software companies are struggling - you could count on the fingers of both hands the number of companies who don't *need* their next game to be a hit.

At the other end it is the specialist interest nature and slow sales which cause problems. If all the sales for say, a top selling assembler for the Spectrum, could have been realised in six months from launch, its publisher would have the resources to fund further utilities more fully. When it takes more like three years for the money to come in, the company merely ticks over.



The Sparklers range from CSD (left) and Imagine Software (above): victims of the computer market's 'growing pains'

l by software for the new uter. Companies need to up the profits from these nonths in order to survive an periods in between.

mmon wisdom has it that is then a small fillip in are sales over Easter, besettles down to summer ums. Quite why this d be isn't very clear. Is are, in households, an egg substitute? Is it the ys, with no guarantee of weather? Or just that acg to statistics there are birthdays in March than her month of the year?

weather certainly plays ortant part in the summer wever much it may seem here is never any decent r, people do spend more utdoors during the sumlidays, and until the pormarket takes off, that's ace you can't take the ter. Praying for rain is a common software practice.

year it seems to have f. Sales for the last of weeks or so have olding up very well

The growing software base for Amiga

As the debate between ST and Amiga owners rages on, one central point has been software bases. Here, Barbara Conway steps back and takes a cool look at just what is available for the Amiga 500.

The formal debut earlier this year of Commodore's "home" version of its Amiga, the A500, was a slightly muted affair. Not so much because of any defects of the micro itself as because of the widespread advance publicity it had received, and a widespread, if somewhat puzzling, belief that whatever the hardware merits of the Amiga range there is hardly any software available to take advantage of them.

In terms of home-grown software there is certainly relatively little yet on the market for the Amiga, although what there is tends to be exceptionally high-quality, but for those willing to sink their patriotic principles and look at packages from across the Atlantic, the choice ranges from fair to excellent.

With the new pricing structure (can Commodore's marketing policy finally be coming into the same world as the rest of us?) the range of programmes being developed on both sides of the Atlantic looks likely to increase dramatically in the very near future. It still isn't likely to compare with, say, the software base for the likes of IBM but a) what does? and b) as long as the packages take advantage of the Amiga's facilities, what does it matter?

On the latter point, the strongest offerings are, reasonably enough, those which were written specifically for the Amiga. Straightforward conversions, particularly from IBM PC formats, can often leave a distinct sense of something lacking. That does not, however, go for all conversions. Some of them are virtual rewrites and well worth looking over.

The question is what actually *is* available for the Amiga, and the 500 in particular, can be a rather delicate one. Many magazines will show large lists of software but the grim truth is that some of it is just unavailable in the UK and some of it is, how shall I put it, not *quite* finished yet.

Further, early packages for the Amiga 1000 sometimes incorporated Workbench 1.1 on the disc. Since the 500 has Kickstart 1.2 on Rom, it requires the similarly updated version of Workbench and thus will not run those programs. It isn't a major drawback – all recently-released software will run on 1.2, but it's worth noting.

Looking at what can be acquired without incurring the risk of high blood pressure and complex foreign negotiations, the priority must be for "serious" software. Even at this much more sensible price, the A500 is still too pricey for a games machine for anyone but the very rich.

For practical purposes, serious software boils down to word processors, spreadsheets, data bases and, where available, suite programs. Forget the last category for the time being; I have yet to see a credible suite for the Amiga.

> **"The good news is that there is some excellent business software around"**

But part of the good news is that there is some excellent business software – virtually all of it making use of pull-down and "requester" menus – around for this computer at far lower prices than comparable (I use the term loosely) programs for many 8-bit machines.

Oddly, the choice of word processors, probably the major serious application of any computer, is not generous. Commodore itself produces *Textcraft*, and adequate program which displays and takes advantage of hardly any of the Amiga's special facilities. Life starts to get considerably more interesting with the newly-updated *Scribble 2* from Micro-Systems Software. I was not particularly keen on the earlier version but this revise, incorporating a fast spelling checker, far easier access to block movements and all the other text manipulations which a good wp should feature and straightforward use of the multitasking abilities of the machine (you can create and work on four different documents simultaneously if your brain can take the strain) is a very notable improvement. The best available as of the time of writing.

Whether that situation will obtain for long is a moot point. Viza Software is finally, after many months of anticipation, bringing out its version of the much-acclaimed *Vizawrite* for the new Amigas and the near-final version I have now received is very impressive and extremely fast.

As well as the standard good wp features, it will open as many documents as the available memory will hold, will accommodate text from other wps and, impressively, will also take pictures from any Amiga graphics packages into a document.

Perhaps the only serious lack at the moment is the absence of a spelling checker (once regarded as a luxury, now an essential feature for a wp which wants to be taken seriously) but Viza says that it will be upgrading the program to include that feature as soon as possible. Also now coming on to the market is the amiga version of *Word Perfect*, which should, on the strength of its implementation on other machines provide some real competition in the field.

Where databases are concerned, Precision Software made an early entry to the race with the Amiga *Superbase Personal*, again a follow on of a tried and tested product on other Commodore machines but comprehensively rewritten for the new machines. Apart from the usual comprehensive sorting and display features you would expect in a database, *Superbase*, as with *Vizawrite*, also incorporates the ability to include graphics, from external files, in its reports. It is a very professional piece of software and I found it easier to get to grips with than the version for the C128.

Somewhat less highly-recommended comes the *Organise* database which has many similar features (minus the graphics

cility) but is considerably less user-friend- and has an alarming tendency to crash at nsitive moments. I haven't been able to ash *Superbase* yet, although no doubt the at is achievable.

The fact that several serious packages r the Amiga incorporate the ability ■ take graphics reflects the great strength of the achine in producing, with the right soft- are, quite superb artwork. Of the graphics ograms available for the 500, the one ich might even convince an artistic klutz e me that I had hidden talents is *Deluxe int II* from Electronic Arts. It does every- ng I have ever seen claimed for graphics ftware, plus quite a bit more and with ■ od colour printer the hard copy for even ateur efforts is astounding.

Among other programs produced by EA also *Deluxe Print* which, although not a sktop publishing package (there are at st three of those currently on the market,) makes the production of greeting ds, letterheads, banners, fancy labels, almost ludicrously easy, for colour or no printers. There is a drawing facility in *rint*, plus a fair-sized graphics library ch can be edited, and pictures from *aint* can be imported for even more ressive results.

Where telecomms ■ concerned, there a few programs around but, as of the of writing, only one which is really thwhile for those who want to use both the electronic mail services and Prestel, *ERuby-Comm* from Watford-based Y2 Computing, again very recently updated with new features and compatibility with the 1.2 system, is little short of superb.

Right: the Amiga 500. The British software base is growing, but it's 'slow and steady' rather than a wild rush to program for the machine. Below left: *Guild of Thieves*, sequel to *The Pawn*. The vicar wouldn't approve of the moral tone.

Y2 has solved the slightly involved problem ■ getting the Amiga to split baud rates with a special adaptor and dongle, and the 1200/75 Prestel-type facility is genuinely all-singing and all-dancing.

Everything can be effected via mouse or keyboard, screens can be saved, edited and skimmed over with astonishing speed, 'carousel' files can be set up for display purposes with ease. Frames can be played with on-line or off and the entire system ■ so user-friendly that it almost fawns on you.

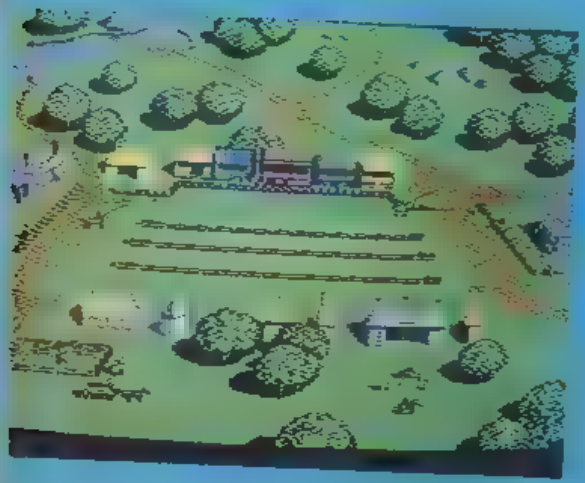
The new version has corrected the irritating failure of the original to switch from the 1200/75 *Ruby-View* program to the *Ruby-Term* terminal emulator side which can be set to emulate just about anything your modem can handle. Previously it was necessary to reboot to get from one program to the other, now there is a 'quit' facility on the menu for each.

On the frankly frivolous side, the 500 ■ reasonably well-supplied with games and the supply is burgeoning fast. Because of the facilities available, it is possible to combine many more elements ■ arcade graphics and adventure than on the 8-bit machines, but the key, as ever, lies in the imagination of the programmers.

Thus a product such as Douglas Adams' new adventure *Bureaucracy*, from Infocom, leaves the graphics ■ your over-heated brain and concentrates on an all-text plot of such diabolical, and often hysterical, complexity that pictures would be totally superfluous. Also highly-recommended from the same stable is *Stationfall*.

Cinemaware has produced a very mixed graphics-based bag for the Amiga, from the now-famous *Defender of the Crown* for the 1000, with staggering graphics and practically no decent game-play, through the embarassingly chauvinistic *SDI* (which boiled down to "nuke the commies") to the recent and excellent *Sinbad and the Throne of the Falcon* which combines very impressive illustrations with mini-arcade-action scenes and a good adventure plot.

In a fast-increasing field, Rainbird must have a special mention for its two outstanding Amiga illustrated adventures, *The Pawn* and the new *Guild of Thieves* (great fun, very challenging but I don't think the Vicar would approve of the moral tone) and Psygnosis, which produced one of the very first arcades for the 1000, *Drattacas*, has now come out with a very impressive mouse or keyboard-drive arcade called *Barbarian*, which is a pleasure to play even if, like me, your inclination is more towards devious thinking than belting monsters with your broadsword.



The 'now-famous' *Defender of the Crown*: staggering graphics from US outfit Cinemaware, out in the UK courtesy of Mirrorsoft.

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Desktop publishing – what's in it for you

These three pages are the first of a two-part series on desk-top publishing and a selection of associated packages on the market.

There's no doubt about it, desktop publishing has caught the imagination of software companies this year. First [illegible] had *Fleet Street Editor* in a confusing [illegible]ber of guises. *Fleet Street Publisher* on [illegible] Atari ST, *FS Editor Plus* on the PCWs, [illegible] *Publishers* and *Editors* on PC compatibles. AMS's *Stop Press* (formerly *Pagemaker*) has been around for some time already, and it too has new versions planned for the autumn.

[illegible]hen the competition started rolling out [illegible]ng others. Electric Studio brought out [illegible]sdesk *International*, and Database [illegible] released *The Desktop Publisher*. This two-part feature, which continues next week, aims to clarify the capabilities and [illegible]tions of desktop publishing packages, [illegible] show you a selection of what is [illegible]able and what you can do with it.

Desktop publishing proper, ie, dtp implemented by connecting [illegible] a Linotron printer, [illegible] for semi-professional results, on some[illegible], like an Apple Macintosh or Xerox [illegible]imentor with laser printed output [illegible] a computerised method for producing anything from leaflets [illegible] full-blown magazines [illegible]s less expensive (in the long term) than [illegible]ing conventional typesetting and printing techniques and the results can be as polished as the conventional publishing process.

Desktop publishing on home micros produces somewhat different results. The on-screen effect is much the same, it's a form of word processing that enables you to add diagrams and drawn pictures (as opposed to photographs, since no home micro desktop publisher includes a photograph scanner) to add headlines and captions and arrange your articles [illegible] columns. The pictures are most commonly generated using a graphic creation program within the package, though some will let you port over digitised pictures.

The text and graphics are generally filed separately and then brought together in the third stage, arranging the text in columns, placing pictures on your 'page', and writing headlines and captions.

Where the home micro product differs most noticeably [illegible] in the output. Most home users will be using a dot matrix printer, so your finished publication will have a dot matrix output, and there is a world [illegible] difference between the appearance [illegible] a document printed using a dot matrix printer and one printed with a laser printer. An average dot matrix printer will output [illegible] between 80 and 120 dots per square inch; laser printers output at 90,000 dots per square inch.

Secondly, the choice of fonts (or type style – the text of this article is written in a typeface called helvetica) on a home micro [illegible] drastically less than on one of the more professional systems.

Given then, that your desktop publishing efforts will be using smaller micros and a dot matrix printer, what is the whole dtp business useful for? Newsletters, obviously, mailshots, leaflets, indeed any form of word processed document where you'd like to include headlining or pictures (bearing in mind that pictures will again be printed out by a dot matrix printer).

The demand for this type of use of computer must be relatively small, compared to the current publicity and flood of dtp products.

In these pages and in next week's dtp feature we deal with a number of dtp packages, and also those products 'on the fringe', not full-blown desktop publishing, but signwriters, font designers, etc, which will take you part of the way, and may well suit your requirements better.

A fundamental difference

Most pagemakers produce print by a sort of glorified graphics dump. On screen you are viewing a graphics image of the letters in a chosen font rather than using the internal character set of the computer. The text handling features of most such programs are very limited – erasing data is a cumbersome process, printing is slow and it is hard to get the same range of styles as you would normally, eg, tabs, bold and italic styles, underlining and so on.

A fundamentally different approach is offered by *Desk Top Publisher*. It divides the page into a mixture of text and graphic windows. These can be any size and layed out in any combination giving complete control over the display. This

continued on page 18 ▶

◀ continued from page 17

system requires some clever tricks at print time but essentially it allows you to add pictures and fancy text to the sort of output you would normally produce. It is particularly invaluable for adding occasional diagrams to long reports.

Within the text windows you can use the standard range of PCW typefaces. The text is very much easier to edit than most Pagemakers, and can also be imported in Ascii form from a word processor. Once entered areas of text too can be changed to a special style and it appears as such on the screen!

The graphics windows can incorporate text typed in any of the supplied fancy fonts. By choosing different window sizes you can do no more than add a showy title to some text, or use anything up to a full page-sized graphics window which operates like a more traditional pagemaker.

There are about a dozen fonts, some ornate borders and a large selection of clip art. New fonts can be designed but they must fit within a 16x16 pixel matrix – twice the height and size of the inbuilt font. Graphics, such as these large characters can be optionally scaled or cropped if they are imported into a window of the 'wrong' size, but any such re-sizing you wish to do inevitably makes the image look more blocky and less attractive. This is probably my major criticism – a selection of different font point sizes would have been better.

"*Desk Top Publisher* divides the page into a mixture of text and graphic windows. These can be any size and layed out in any combination, giving complete control over the display"

There is an excellent collection of graphics tools for producing drawings, boxes etc. Although these work more effectively with a mouse they can be used with the keyboard. A block save and import option allows any of the supplied clip art images to be used in your own pages.

The program is driven by an excellent and impressively fast windows and icon system that looks superb. It works with a mouse, but does not need one. Print quality can be draft or NLQ, the latter is very good within the limits of the PCW printer. Unlike many such systems it is well thought out and scores very highly on ease of use. It could be the basis of the superb system on the 9512.

Tony Kendle

Program *Desk Top Publisher* **Micro** Amstrad PCW **Price** £29.95 **Supplier** Database Publications, Europa House, 68 Chester Road, Hazel Grove, Stockport.

FASTER THAN LIGHT

Tony Kendle expounds upon the virtues and drawbacks of laser printing – the desk top publishing system that can produce the best result – but is it worth the price?

Printing technology is proportionately less expensive the more you have to do – very small print runs are costly. DTP can solve these problems but the capital investment in a working system is not small and is only practical for those who often have print work to do.

Fortunately, several cost effective solutions are coming to the fore which allow you to produce laser or true typesetting quality output without having to buy the equipment and allowing you to do the costly page design process yourself.

One approach is to use a program that produces the same output, within the bounds of the relative quality, on a laser and a cheap dot printer. Nabitchi is gearing up a service based around two PC programs - *Fontrix* and *Printrix* - which you can buy for roughly £50 each. When your designs are correct you can send the disc to the company for laser printing with several options including coloured inks and printing on paper sealed in laminated plastic. Full reviews will appear later, but briefly *Fontrix* is a traditional pagemaker. *Printrix* allows you to embed special formatting commands into a document produced by *Wordstar* or *Newword* which can then be printed out in a variety of fonts, with borders etc.

Alternatively companies such as Easyprint will supply a selection of print typeface samples. Again, with embedded formatting and font selection commands, a file created on an Amstrad PCW disc (using *Locoscript* or several other processors) can be sent to them for professional typesetting. Unfortunately there is no way of testing the output before you send it.

Laser printers have set a new stan-

DESK TOP PUBLISHING

DESK TOP PUBLISHING

dard in hard copy, making all other alternatives look second rate. They are quiet, fast (ten pages a minute), clean, almost infinitely flexible and capable of unparalleled quality. Sounds too good to be true? In fact, though they *are* quiet, as far as the rest goes things are probably not as straightforward as you may think.

To start with they are based on photocopier engines and I have had enough experience of those to doubt how clean, easy to use and maintenance free they are likely to be.

The quality issue has to be conceded, although there is some ambiguity about it - 24-pin printers are capable of a resolution of 360 dots per inch compared to that of 300 per inch of a laser printer. In practice, however, the size of the dots on a 24-pin printer is much larger than on a laser and the figure of 360 per inch is achieved by a great deal of overlapping.

It is really the quoted speed and flexibility of laser printers that is misguiding. When producing plain text using the inbuilt fonts the machines can crack along. However the facilities required by a pagemaker (many fonts, graphics, precise positioning on the page etc) mean that the printer has to be used in the dot addressable graphics mode.

The system commonly used is that the design of the page is broken down into small pieces of information, sent down a serial cable and reconstructed on a dot-by-dot basis by the printer itself. This is such a longwinded process that it can take 15 minutes for a page of output to be produced, that is if the printer can manage a whole page at all. To hold a graphic image of an A4 page at 300 dpi takes nearly two megabytes of memory.

To store and manipulate this amount of data places an enormous demand on the electronic of the printer and many laser printers, particularly the cheaper ones, are not adequate for the task. It is not uncommon for them to have only 256 or 512K - more than enough for text but only adequate for a few inches of graphics output. The HP Laserjet is notorious for this but other machines suffer as well.

A better solution is perhaps to buy a laser printer with most of the electronics removed and add the required two megabytes of memory to the computer (if possible - a Spectrum could not be used, for instance). You can then let the micro drive the laser photocopier directly. It can be looked on as a much more sophisticated version of the system the Amstrad PCW uses. This approach is often cheaper, much faster, and overcomes any memory limitations of the printer itself.

The Atari DTP hardware will use this system. Similarly, for the PC range you can use the Talltrees plug-in JRam and JLaser boards. Nabitchi computing sell a complete PC system with a Canon laser engine and 2Mb of add-on Ram. It produces excellent graphics output over the whole page, outputs pages that would normally take 12 minutes in three minutes, and allows the memory to be used as a Ram disc and directly by some programs. The disadvantage of course that the printer will only work on modified computers.

Signing on?

Almost inevitably, *Tas-sign* arrived in my post just days after my review of the competing, albeit much longer established *Signwriter* was published. Both programs are designed to allow the user to produce very large printed output, 'for sale' notices, announcements of meetings, shows, etc. They are very much better than traditional pagemakers for this purpose because there are very few restrictions on the font size that can be used. Any letter can be scaled up or down without losing the quality of the definition. This contrasts with most home pagemakers where the user must stick to the font size supplied, or accept that the characters will become blocky as they are magnified.

Comparison between them is difficult because both are excellent in their own way and I really can't decide which I feel is best.

Tas-sign allows up to 332 chars per line (including sideways printing for banners) and places absolute limits on the maximum and minimum character height that do not exist with *Signwriter*.

Signwriter scores in the following ways: it is capable of letting you add boxes, you can re-define characters and design new fonts or logos, and you can select different settings for border width and position. It also allows you to precisely alter the position of the borders and text on the page, eg. to leave blank space for written messages.

On the other hand, *Tas-sign* is much simpler to use and has vastly better options for editing existing sign designs. Mixing fonts on one line is also easier. To use it requires less disc shunting and it can also run on the 6128. There is also an option for producing attractive patterned letters and you can use text kerning for a more professional finish.

Tony Kendle

TAS-SIGN

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An introduction to LISP

Kenn Garroch begins another of his informative programming series – this time on the intricacies of Lisp, which he calls one of the most elegant of languages.

Lisp is one of the most sophisticated and elegant program languages available on microcomputers. Both of the acronyms (Literally Thousands of Parentheses and LISt Processing) sum up its capabilities quite well. Its structure and flexibility make it one of the foremost, and oldest, computer languages used for Artificial Intelligence (AI) applications. It is worth looking at because it is a fascinating language and is completely different from the old standards, Pascal, Basic, C etc.

When you boot up a lisp interpreter, it gives the prompt 'Input' or 'Evaluate' (or some such, depending on the version), and is asking for a function to work out. After working it out, it gives a 'value' or 'returns' and the answer. The command level of Lisp is a question and answer system, and Lisp programs are built up from functions that take arguments and produce results.

The basic nature of Lisp is the list of information – such as (ST C64 BBC AMS).

A list is bounded by round brackets (parentheses) and contains objects separated by spaces. These objects can be other lists or single entities known as atoms. An atom is made up from a sequence of characters and is the smallest object possible.

To manipulate the lists, some basic functions are provided at the core of the system. All other commands can be made up using these instructions – including most of the core. One of the simplest functions is **set**, used to assign a list or atom to another atom ie, Input: (set 'computers '(ST C64 BBC AMS)) Value: (ST C64 BBC AMS)

Notice the brackets around the whole expression. These tell the interpreter to treat the contents as a function, where possible. Lisp starts from the innermost set of brackets and works out. First of all the list (ST C64 BBC AMS) is looked at and is determined to be a list that is not to be evaluated since it is preceded by a ' or quote [actually shorthand for (quote (ST C64 BBC AMS))]. The same is true of computers ie, it is not a function so it must be an identifier or variable name to which the list (ST C64 BBC AMS) is to be assigned.

using the set function. An alternative, and easier way is to use setq which allows the quote to be omitted from the first argument ie. Input: (setq ST '(Atari 68000)) Value: (Atari 68000).

The Input and Value are roughly what you get on the screen, I shan't bother with them after this.

This assigns the list of machine information to the identifier ST. Typing in ST reveals that this is the case since Lisp replies with the list (Atari 68000). Each of the items in the list can also be an identifier of a list so *(setq BBC '(Acorn 6502))* assigns some details about the BBC. To get at the details, Lisp needs functions that will split a list into its component parts. There are two commands for this, *car* and *cdr*. *car* returns the first item in the list ie. the head, and *cdr* returns the rest ie. the tail. So:

(car computers)

gives

and

(cdr computers)

gives (C64 BBC AMS)

Why they are called *car* and *cdr* is lost in the mists of time. However, they are important and used very often since they are the major way of splitting up lists.

To find what other command *eval* is needed. This evaluates any expresson it is given hence:

(eval 'computers)

gives (ST C64 BBC AMS) which is the same as typing in computers. Don't be mislead by ' as it is shorthand for (eval (quote computers)) and (eval (car computers)) here the argument for car is the identifier of a list and gives (atari 68000).

The list assigned to ST. *eval* simply returns the value or list assigned to it in its argument. At this point you will have noticed the nesting of functions i e using the result of one function as the argument of another. This is vital to the way in which Lisp works, and can be the source of many problems. Lisp is usually quite hepful about such things and most good interpreters have a backwards tracing function that tells you how it arrived at the error. For instance: (eval (car (cdr computers))) will give an unassigned variable error before saying that it was eval that encountered the error. In this instance, the cdr of computers gives (C64 BBC AMS) and the car of this is C64. Since C64 has nothing assigned to it, it *eval* generates an error. (setq C64 '(Commodore 6502)) is one remedy.

Next week I'll cover some of the more interesting aspects of Lisp such as defining functions and recursion.

Recommended books: *A Beginner's Guide To Lisp* Tony Hasemer, Addison Wesley. *Anatomy of Lisp* J R Allen, McGraw Hill. The user guide of whatever Lisp you are using.

Implementations of Lisp

Lisp Rom **Micro** BBC **Price** £49.00 **Supplier** Acornsoft/Superior Software, Regent House, Skinner Lane, Leeds LS7 1AX.

Cambridge Lisp **Micro** Atari ST **Price** £149.95 **Supplier** Metacomco, 26 Portland Square, Bristol.

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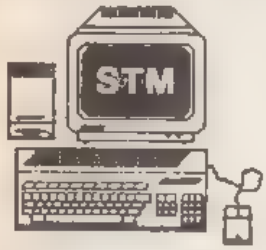

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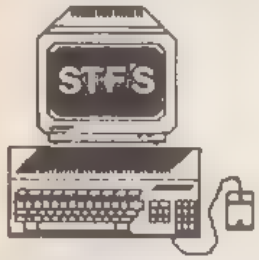

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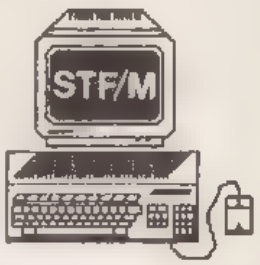

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Discmon

A Moulden

Discmon is a disc sector editor for the BBC which runs in Mode 7, and will be presented over three weeks.

The following keys are used to examine a disc

Cursor keys move the editing cursor, one byte at a time

Shift-Cursor keys to move to the bottom of the page or one end of a line.

Control-Cursor keys moves about the disc, one track/sector at a time.

Control-Shift-Cursor keys moves five tracks/sectors at a time

Tab toggles between the first and second half of the sector.

Copy displays keys and brief summary of language syntax

F0 displays position of files on disc (hex and decimal).

F1 changes the case of the character at current cursor position.

F2 changes current byte to a preset value.

Escape to exit *Discmon*.

More details next week

```
10VDU7
20REM DISCMON SYSTEM 2 - v1.1
30REM (c)1987 by Andrew Moulden
40*DIR$
50ONERRORGOTO4210
60HIMEM=&7C00:PROCinit
70REPEAT
80A$=FNin(26):N%=A%
90IFLENA%=1:A%=ASCA%:edit%=1:PROCchan
ge(A%,0%)
100A%=FNupper(A%)
110IFLENA%=2ANDFNvalidhex(A%,2):edit%=
1:B%="&"+A%:A%=EVALB%:PROCchange(A%,0%)
120VDU28,0,23,39,22,12
130B%="":FORP%=1TOLENA%
140C%=ASCMID$(A%,P%,1)
150IFC%<>32:B%=B%+CHR$C%
160NEXT:A%=B%
170C%=LEFT$(A%,3):D%=LEFT$(A%,4)
180E%=LEFT$(A%,2)
190IFLENA%<>1ANDLEFT$(A%,1)="*"PROCsta
r
200IFC%="DRV"ANDLENA%=4PROCdrv
210IFC%="SCT"ANDLENA%=4PROCsct
220IFC%="TRK"PROCtrk
230IFC%="ABS"PROCabs
240IFC%="REL"PROCrel
250IFD%="FIND"ORD%="MOVE"D%="FILE"
260IFD%="FILE"PROCfile
270IFA%="HELP"ORA%="HEL"PROCinst
280IFA%="QUIT"IFFNupdateyn:PROCsave:GO
TO5020:ELSEIFA%="QUIT"GOTO5020
290IFLEFT$(A%,2)="DH"ANDLENA%>2PROCdh
300IFLEFT$(A%,2)="HD"ANDLENA%>2PROChd
310IFA%="NEW":PROCnew
320IFC%="ASC"ORC%="CHR":PROCset
330IFD%="XNOR"ORD%="NXOR"ORD%="NEOR"D%
="ENOR"
340IFC%="XOR"C%="EOR"
350IFE%="OR"PROClogops(E%)
360IFC%="NOR"ORC%="AND"ORC%="EOR"PROCl
ogops(C%)
370IFD%="ENOR"ORD%="NAND"PROClogops(D%
)
380IFA%="NOT"PROCnot:ELSEIFA%="NEG"PRO
Cneg
390F%=LEFT$(A%,1):IF(F%="-"ORF%="_"ORF
%="+")ANDLENA%<>1PROCadsub
400UNTILFALSE
410:
420DEFPROCloadsave(DR%,TR%,SC%,RW%)
430edit%=0:?&80=DR%:?&81=TR%:?&82=SC%
440?&83=&48+8*RW%:CALLdisc:ENDPROC
450:
460DEFPROCscr
470PRINT;" Asc:"TAB(7,0)"Drv:  Trk:"
480PRINTTAB(20,0)"Sct:  Abs:"
490PRINTTAB(34,0);TRK%"T"
500PRINTTAB(1,1)"Dec:"TAB(13,1)"Dec:"
510PRINTTAB(26,1)"Dec:"TAB(25,2)"Bin:"
520PRINTTAB(17,2)"F2:";:CH$=STR$~ch%:I
FLENCH$=1CH$="0"+CH$
530PRINTCH$
540PRINTTAB(1,24)CHR$157r$"DISCMON 2 v
1.1 (c)1987 A.Moulden  "CHR$156;
550ENDPROC
560:
570DEFPROCshow:VDU26
580PRINTTAB(11,0);DR%TAB(24,0);SC%
590TR$=STR$~TR%:IFLENTR$=1TR$="0"+TR$
600PRINTTAB(17,0)TR%;TR$=STR$~TR%
610IFLENTR$=1TR$="0"+TR$
620PRINTTAB(17,1)TR$
630PRINTTAB(30,0)"000"TAB(30,1)"000";
640abs%=TR%*10+SC%:A$=STR$~abs%
650PRINTTAB(33-LENA$,0)A$
660A$=STR$abs%:PRINTTAB(33-LENA$,1)A$
670PRINTTAB(1,2)"File:";:F$=FNfile
680PRINTF$;SPC(9-LENF$)
690PROCprint(E%):ENDPROC
700:
710DEFPROCprint(fig%)
720LOCALE%:PRINTTAB(35,1)"S";fig%+1
730*FX15
740M%=4:VDU26:IFfig%=0:E%=0:ELSEE%=&
750PRINTTAB(25,2)r$;
760IFdb%?10=24PRINT"Unformatted"
770IFdb%?10=0PRINTSPC9"OK"ELSEIFdb%?10
<>24PRINT" Disk error"
780PRINTTAB(0,4)r$;
790PRINT"   08 19 2A 3B 4C 5D 6E 7F";
800PRINT"  01234567"TAB(25,3)g$
810?&70=fig%*128:CALLprint
820ENDPROC
830:
840DEFFNsure:LOCALG
850PRINTy$"Are you sure? (y/n)";
860G=GET:IFG=78ORG=110VDU8:=0
870IFG<>89ANDG<>121GOTO860
880*FX15
890VDU8:=-1
900:
910DEFPROCsct:PRINT;
920B$=RIGHT$(A$,1)
930IFB$<"0"ORB$>"9"ENDPROC
940C%=VALB$
950IFFNupdateyn:PROCsave
960CLS:SC%=C%
970PROCloadsave(DR%,TR%,SC%,1):VDU26
980D%=0:E%=0:F%=0:fig%=0
990PROCshow:ENDPROC
1000:
1010DEFPROCtrk:PRINT;
1020IFLENA$<4ORLENA$>6ENDPROC
1030IFRIGHT$(A$,1)<>"T"GOTO1060
1040B%=FNdectrk:IFB%=-1ENDPROC
1050GOTO1120
1060B%=LENB$:B$=RIGHT$(B$,B%-3)
1070B%=LENB$
1080IFB%>2ENDPROC
1090IFB%=1B$="0"+B$
1100IFFNvalidhex(B$,2)=0ENDPROC
1110B%=EVAL("&"+B$)
1120IFB%>=TRK%ENDPROC
1130IFFNupdateyn:PROCsave
1140CLS:TR%=B%
1150PROCloadsave(DR%,TR%,SC%,1):VDU26
1160D%=0:E%=0:F%=0:fig%=0:PROCshow
1170ENDPROC
1180:
1190DEFPROCabs:PRINT;
1200IFLENA$<3ORLENA$>8ENDPROC
1210IFRIGHT$(A$,1)<>"T"GOTO1240
1220B%=FNdecimal:IFB%=-1ENDPROC
1230GOTO1290
1240B$=RIGHT$(A$,3):C$=LEFT$(B$,1)
1250IFC$="0"B$="00"+RIGHT$(B$,1)
1260IFC$="9"B$="0"+RIGHT$(B$,2)
1270IFFNvalidhex(B$,3)=0ENDPROC
1280B%=EVAL("&"+B$)
1290IFB%>=(TRK%*10)ENDPROC
1300IFFNupdateyn:PROCsave
1310TR%=B%DIV10:SC%=B%MOD10
1320CLS:PROCloadsave(DR%,TR%,SC%,1)
1330VDU26:D%=0:E%=0:F%=0:fig%=0
1340PROCshow:ENDPROC
1350:
1360DEFPROCrel:PRINT;
1370IFLENA$<3ORLENA$>9ENDPROC
1380A$=RIGHT$(A$,LENA$-3):NF%=2
1390PF%=0:N$=LEFT$(A$,1)
1400IFN$="-"NF%=1:PF%=1
```

continued on page 24 ▶

PROGRAMMING: BBC

◀ continued from page 23

```
1410N%=ASCN$:IFN$="+"NF%=0:PF%=1
1420IFFNvalidhex(N$,1)<>0NF%=0
1430IFNF%=2ENDPROC
1440IFPF%=1A$=RIGHT$(A$,LENA$-1)
1450N$=RIGHT$(A$,1):TF%=0
1460IFN$="T"TF%=1:A$=LEFT$(A$,LENA$-1)
1470IFFNvalidhex(FNPAD(A$),3)=0ENDPROC
1480IFTF%=0GOTO1500
1490N%=VALA$:GOTO1510
1500N$="&"+A$:N%=EVALN$
1510IFNF%=1N%=-N%
1520NX%=N%MOD(TRK%*10)
1530AB%=TRK%*10+SC%
1540NE%=AB%+N%:IFNE%<0NE%=NE%+TRK%*10
1550IFNE%>=TRK%*10NE%=NE%-TRK%*10
1560TR%=NE%DIV10:SC%=NE%MOD10
1570IFFNupdateyn:PROCsave
1580CLS:PROCloadsave(DK%,TR%,SC%,1)
1590VDU26:O%=0:E%=0:F%=0:flg%=0
1600PROCshow:ENDPROC
1610:
1620DEFFNdecimal
1630B$=LEFT$(RIGHT$(A$,4),3)
1640C$=LEFT$(B$,1)
1650IFC$="B"B$="00"+RIGHT$(B$,1)
1660IFC$="S"B$="0"+RIGHT$(B$,2)
1670FL%=0:FORP%=1TOLENB$
1680S$=MID$(B$,P%,1)
1690IFS$<"0"ORS$>"9"FL%=1
1700NEXT:IFFL%=1=-1
1710=VALB$
1720:
1730DEFPROCfile
1740IFLENA$=4ENDPROC
1750A$=RIGHT$(A$,LENA$-4)
```

PROGRAMMING: AMSTRAD CPC

Verify

Scott Singer

This program will install a new RSX, a verify command. With this command you can check whether the program you just saved to tape or disc has in fact been saved correctly. The program in memory must not have been run or altered in any way when the command is used otherwise it will not check with the one that has been saved.

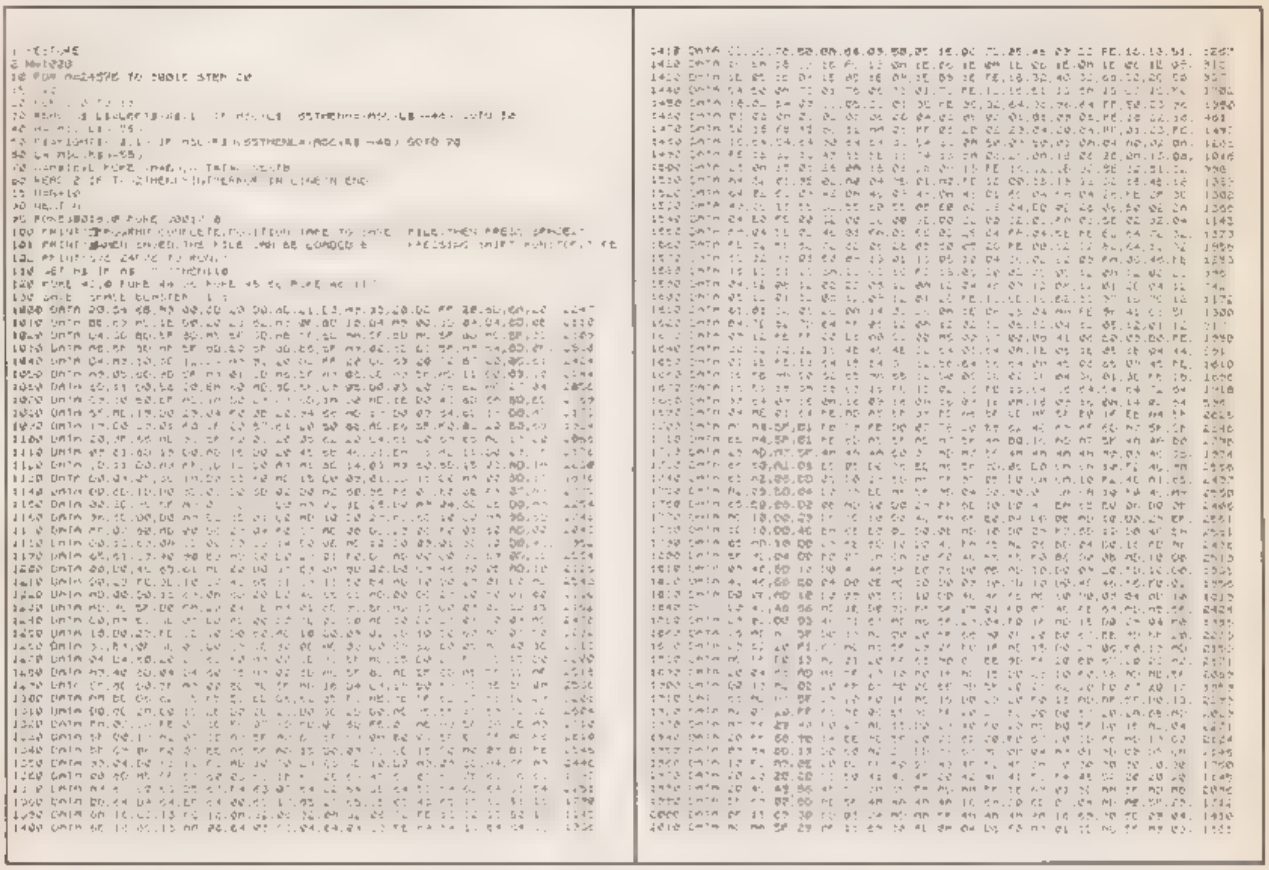
To load the machine code enter MEMORY &9A74, LOAD "VERIFY" and then CALL &9A74 to initialise. The syntax is VERIFY,@A$ where A$ is the name of the program to be verified.

```
70 MEMORY &9A74
80 MODE 2
90 PRINT "********************
100 PRINT"*      Verify      *
110 PRINT"* (C) Scott Singer *
120 PRINT"*       1987       *
130 PRINT"********************
140 l=1000
150 FOR x=&9A75 TO (20*14)+&9A74
160 READ a$:b=VAL("&h"+a$):IF LEN(a$)=4
THEN GOTO 250
170 subtot=subtot+b
180 POKE x,b
190 NEXT
200 CALL &9A75
210 SAVE "verify",b,&9A75,272
220 PRINT:PRINT "Verify installed."
230 PRINT "Command format:  |VERIFY,@A$"
240 END
250 checksum=b
260 IF checksum<>subtot THEN PRINT "Data
 error in line"l"":END
270 l=l+10
280 subtot=0:GOTO 160
290 :
1000 DATA 21,8A,9A,01,7E,9A,C3,D1,BC,83,
9A,C3,8E,9A,56,45,52,49,46,D9,0A0B
1010 DATA 00,00,00,00,00,FE,01,C2,E6,9A,
DD,6E,00,DD,66,01,7E,FE,00,CA,0816
1020 DATA E6,9A,32,20,9B,47,23,5E,23,56,
21,0E,9B,1A,77,23,13,10,FA,3A,0683
1030 DATA 20,9B,47,21,0E,9B,11,70,9C,CD,
77,BC,30,27,ED,53,21,9B,ED,43,086C
1040 DATA 23,9B,ED,5B,23,9B,2A,21,9B,CD,
80,BC,CA,E6,9A,46,B8,20,22,23,0960
1050 DATA 1B,7A,FE,00,20,EF,7B,FE,00,2B,
0C,18,EB,CD,7D,BC,21,6C,9B,CD,094A
1060 DATA 04,9B,C9,21,25,9B,CD,04,9B,CD,
7A,BC,C9,21,4A,9B,CD,04,9B,CD,09C0
1070 DATA 7D,BC,C9,7E,FE,7B,C8,CD,5A,BB,
23,18,F6,00,00,00,00,00,00,00,07D4
1080 DATA 00,00,00,00,00,00,00,00,00,00,
00,00,00,00,00,00,0D,0A,46,69,00C6
1090 DATA 6C,65,20,76,65,72,69,66,69,65,
64,3A,0D,0A,4E,6F,20,65,72,72,06B6
1100 DATA 6F,72,73,20,66,6F,75,6E,64,2E,
0D,0A,7B,0D,0A,46,69,6C,65,20,0607
1110 DATA 76,65,72,69,66,69,65,64,3A,0D,
0A,45,72,72,6F,72,20,66,6F,75,0713
1120 DATA 6E,64,2E,0D,0A,07,7B,43,6F,6D,
6D,61,6E,64,20,61,62,6F,72,74,0690
1130 DATA 65,64,0D,0A,7B,00,00,00,00,00,
00,00,00,00,00,00,00,00,00,00,015B
```

Space Blaster

John Taylor

There's no subtlety in this three part production. Blam blam boom is the order of the day in this machine code shoot 'em up that features 25 different attack waves of aliens. As the game progresses the waves get faster and faster. More stuff next week.



Betta Trace

Peter Finan

Replace the C16/+4's TRACE command with this much improved version. After typing ⏎ and saving the program, enter NEW and then load in the program you wish to test. Enter SYS 14501 to initialise and POKE 750,1 to turn the TRACE command on.

When run, the current line being executed will appear in the top left of the screen. Next to it the current variable will be shown. If you POKE 761,1 it will turn on a stepping feature so that each line of the target program will only be executed when the *Shift* key is pressed.

```
READY.

 1 REM ******************
 2 REM ** BETTA-TRACE **
 3 REM **   P.FINAN    **
 4 REM ** MAY/JUNE 87 **
 5 REM ******************
10 AD=DEC("3800")
15 FOR LI=1 TO 22
20 CH=0
25 FOR BY=1 TO 8
30 READ A:CH=CH+A
35 POKE AD,A:AD=AD+1
40 NEXT BY
45 READ B:IF B=CH THEN 55
```

continued on page 26 ▶

PROGRAMMING: C16/+4

◀ continued from page 25

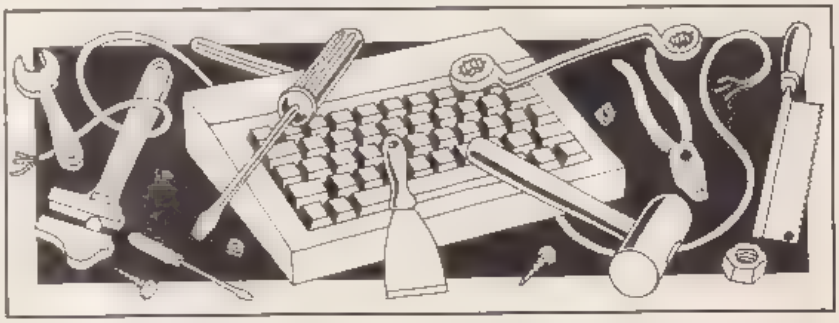
```
50 PRINT "DATA ERROR IN LINE";PEEK(63)+256*PEEK(64):STOP
55 NEXT LI
60 POKE 55,255:POKE 56,55:CLR
65 REM ****************************
70 REM ** SYS 14501 TO ENABLE   **
75 REM ** POKE 760,X (X=1 OR 0) **
80 REM ** TO TURN TRACE ON/OFF  **
85 REM ** POKE 761,X (X=1 OR 0) **
90 REM ** TO TURN STEP ON/OFF   **
95 REM ****************************
1000 DATA 169,0,141,235,2,36,129,48 760
1005 DATA 3,76,214,139,173,248,2,240,1095
1010 DATA 248,32,47,56,173,249,2,240,1047
1015 DATA 240,173,67,5,170,41,1,201,898
1020 DATA 1,208,246,224,5,240,226,174,1324
1025 DATA 67,5,202,240,250,208,218,165,1355
1030 DATA 196,72,165,197,72,165,202,72,1141
1035 DATA 165,205,72,162,0,160,0,24,788
1040 DATA 32,57,216,169,18,32,210,255,989
1045 DATA 32,79,255,76,73,78,69,32,694
1050 DATA 45,32,0,32,91,164,32,79,475
1055 DATA 255,32,221,32,86,65,82,32,805
1060 DATA 45,32,0,169,32,133,5,165,581
1065 DATA 70,201,91,144,6,233,128,162,1035
1070 DATA 36,134,5,133,4,165,69,201,747
1075 DATA 91,144,6,233,128,162,37,134,935
1080 DATA 5,32,210,255,165,4,32,210,913
1085 DATA 255,165,5,32,210,255,169,32,1123
1090 DATA 32,210,255,169,146,32,210,255,1309
1095 DATA 104,133,205,104,133,202,104,133,1118
1100 DATA 197,104,133,196,96,169,0,160,1055
1105 DATA 56,141,8,3,140,9,3,96,456


READY.
```

PROGRAMMING: SPECTRUM

Improved Machine Code

Andrew Styles



If you've just learnt how to program in machine code then the chances are that your programs are not honed to perform at maximum efficiency, either with regards to speed or memory usage. This article will attempt to deal with these topics and show you how to squeeze that extra ounce of performance from your Spectrum.

Speed

Speed is all important if you wish to perform fast screen clears, and raster-avoiding routines. For example, it can be very annoying if you have a decent sprite routine which is bugged by flicker caused by the television scan line. As a guide line, the television raster occurs every 50th of a second. The speed at which the processor runs (in MHz) is the number of T states the processor executes every second. The ZX Spectrum runs at 3·5MHz. This is 350000 T states per second. Divide this by 50, giving 7000 T states every 50th of a second. An

average instruction has about 10 T states. So, timing can be critical. If you need to judge how far the raster scan of the television gets down the screen during your routine, then do the following procedure: Set the border to black, then call your routine, then reset the border to white. This will make the border black down to where your routine finished. Speed saving examples are Immediate Jump (JP) instead of Relative Jump (JR). A JR takes 12 T states on a true condition, and 7 on a false. A JP takes 10 T states whether true or not. At all costs avoid IX and IY. They are appallingly slow. For example RES 2, (IX+1) takes 23 T states, and RES 2, (HL) takes 15.

Use as many registers as you can, rather than using memory loads, as memory loads are slower than using a register load. If you have to do a repeated operation on the (HL), then load it into a register and do the repeated operation on the Register, then load it back into HL afterwards. This will save an incredible amount. Use LD B,xx, and DJNZ for loops. The DJNZ is better than DEC B, JP NZ by 1 T state per loop. If you can, use EXX rather than PUSH, and EX AF, AF rather than PUSH AF (3 PUSHes is 33 T states, EXX is only 4!) And if you need to use HALT, then set up an Interrupt Routine thus:

```
EI      ; Re enable interrupts
RET     ; Return
```

The interrupt will still occur, but will do nothing, thus not slowing down the code. Next, never call a routine only once. Put it in the main part, and jump past it if necessary. Lastly, if you have a set number of LDIR's to do, then use multiple LDIs instead. For example:

```
LDIR    LD BC,5         ; 10
        LD HL,#5000     10
        LD DE,#4100     10
        LDIR            21 * 4 + 16
                        ---------
                        130 T States

LDI     LD HL,#8000     ; 10
        LD DE,#4100     10
        LDI             16
        LDI             16
        LDI             16
        LDI             16
        LDI             16
                        ---------
                        100 T States
```

On a final note, it is usually the case that Speed Saving tricks will always use more memory, simply because the less loops you use the better. You will find that repeated the same set of instructions twice instead of looping round twice is faster, if not exactly beautiful, but it saves time.

Memory

Saving memory saving is important to those with large programs, with lots of data. Saving a byte or two may not sound like much, but when considered overall, the amount can be an extra screen, or maybe another sound effect. Memory saving can be done by using some of the insturctions which have set effects. Some of these are, LD A,0 which can be rewritten, with a saving of 1 byte, as XOR A. CP 0 can be also rewritten with AND A, or OR A. CP 255 (if you're not worried about A) can be INC A (which will set the Z flag if it wraps round to 0). If you need to CALL a routine, and then RET, then JP to the call routine, which will RET to where you want to. Try to use HL, instead of ED and BC, for memory loads, which saves a byte. Also, with RL A, RR A, RRC A, and RLC A, use RRA, RLA, RRCA, and RLCA, which saves a byte.

Tricks

In this section, I will try to cover some of the programming tricks that I use constantly. Firstly, for double-byte looping:

```
DEC BC          Decrement BC
LD A,B          Get High byte
OR C            Or with low byte
JP NZ,LOOP      ; If flag set if both are Zero
```

This will loop round, until BC = 0, because 0 OR 0 = 0. Multiplying routines are something which took me a long time to get to grips with. Well it's easy. All you do is work out what the nearest power of two is (2, 4, 8, 16, 32, 64, 128 etc) then take the remainder, and work out the nearest to two again, for example:

```
HL * 13:PUSH HL
        POP BC          BC = HL * 1
        ADD HL,HL       HL = HL * 2
        ADD HL,HL       HL = HL * 4
        PUSH HL
        POP DE          DE = HL * 4
        ADD HL,HL       HL = HL * 8
        ADD HL,DE       HL = HL * 8 + HL * 4 = HL * 12
        ADD HL,BC       HL = HL * 12 + HL * 1 = HL * 13

HL = HL * 8 ADD HL,HL   HL = HL * 2
        ADD HL,HL       HL = HL * 4
        ADD HL,HL       HL = HL * 8
```

These small items help. Instead of adding it to itself 13 times, this is much better, and will save time if not bytes (although it may). Suppose you wish to return to a certain subroutine after any one of a number of different JPs. Then, why not PUSH the address of the routine on the stack, and then use RET ? This will save you from doing JP routine every time. You can always POP it if you don't require it. Want to slow down a routine? Then use the following.

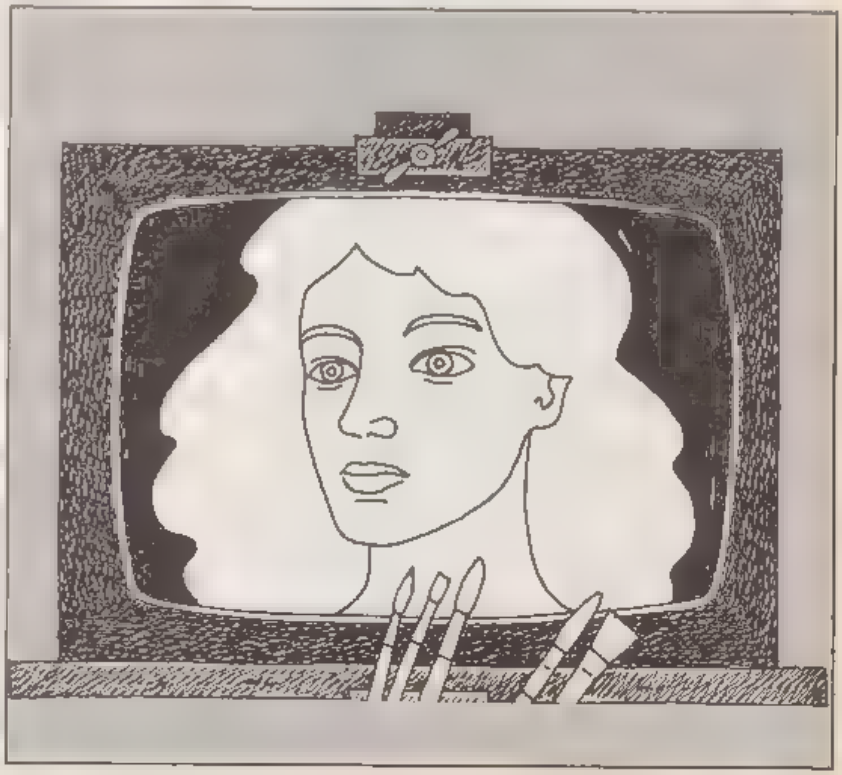
```
LD HL,0
LD B,H
LD C,B          ; Move Memory from 0000-FFFF to 0000 (In
LD D,B          ; other words, do nothing!)
LD E,B          ;
LDIR
```

The reasons for slowing down a piece of code may not be obvious, but how about trying to see what happens when you print something to the screen? If you call this routine before every screen load, you will see each byte being dumped to the screen. Finally, a trick I have just started using is this. I needed to find out what the registers contained at a certain point in a program. So, at the beginning of the program, I did LD (STACK), SP. Then when I wanted to know the Values, I jumped to routine as follows:

```
LD (VAR1),BC    ; Save HL, BC and DE
LD (VAR2),DE    ; in memory locations
LD (VAR3),BC    ;
LD SP,(STACK)   ; Reset the stack to what
RET             ; it was when I very first
                ; entered the code, and do
                ; a RET
```

These three ways of improving your code will become second nature soon, and you will wonder why on earth you ever used any other way.

Note that the memory saving tips may save time as well as bytes, as will the few tricks. I hope this article has been of some help to you, all these ideas discussed here are used by coders everywhere.



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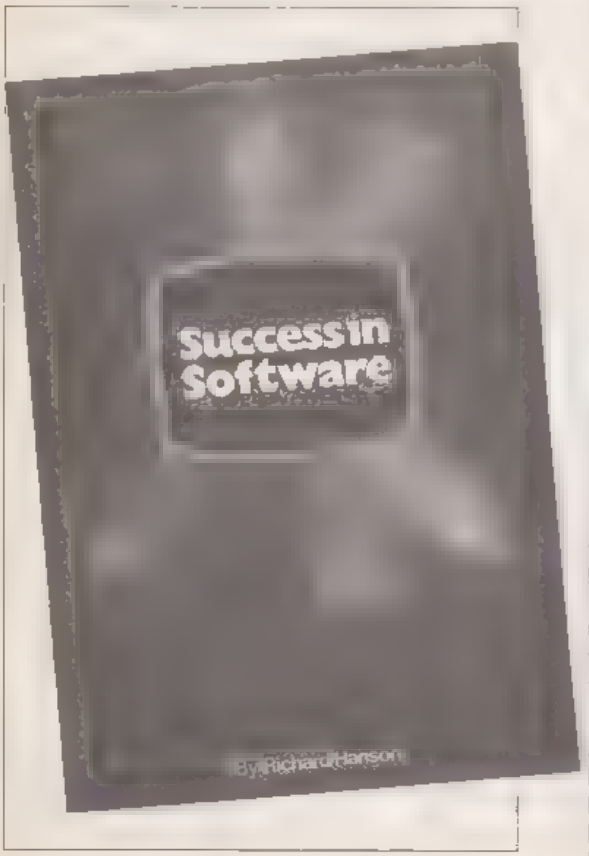

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Directory Delete

Timothy Harris

As the name suggests, this C64 routine will allow you to give your discs added protection by removing the disc directory. As this is a one way operation make sure you don't do it to the wrong disc

```
READY.


10 OPEN15,8,15 INPUT"□INSERT DISC AND PRESS RETURN";A$:PRINT"□WORKING."
20 OPEN1,8,15,"I0":OPEN5,8,5,"#":PRINT#1,"U1 5 0 18 0":FORX=144TO168:READB
30 PRINT#1,"B-P:5 "X:PRINT#5,CHR$(B);:NEXT
40 PRINT#1,"U2 5 0 18 0":PRINT#1,"I0=":CLOSE15
50 DATA20,20,20,141,145,145,0,0,0,0
60 DATA255,20,255,20,20,20,20,20,20,20,20,20,20,20,20,20
70 INPUT#1,A:CLOSE1:IFA>0THENPRINT"□DIRECTORY NOT DELETED."
80 IFA>0THENINPUT"SHIFTDELETE ANOTHER DIRECTORY (Y/N)";A$:GOTO100
90 INPUT"□DELETE ANOTHER DIRECTORY (Y/N)";A$
100 IFA$="Y"THENRUN
110 END

READY.
```

Freezer

Mark Gidley

Freezer for the BBC will allow you to freeze a program at any time by pressing @, and then *P* to continue. The routine lies at &380 which is rarely used so it should be compatible with most programs.

```
>
   10REM Program freeze
   20REM Press : & ■■ activate
   30REM         ■ to deactivate
   40:
   50FORIX=&380 TO &3B4 STEP4
   60READA%:!IX=A%:NEXT:VDU7
   70?&204=&80:?&205=3
   80PRINT"Ready..":END
```

```
   90:
  100DATA &0B48FCA5,&4BBA4B98
  110DATA &AB20C7A2,&D0C7C903
  120DATA &03AF200C,&AB20B7A2
  130DATA &D0B7C903,&68AA68F7
  140DATA &B5682BA8,&DC934CFC
  150DATA &F42079A9,&A960BAFF
  160DATA &FFE32007,&00000060
```

Bit Pattern

Mark Gidley

This BBC ■ routine will display a number, hex or decimal as a bit pattern. This can be useful for creating things like user defined characters. To use the routine enter A%=*number* CALL&900

```
>R
   10REM Decimal to bit patterns
   20FORIX=&900 ■■ &930 STEP4
   30READ A%:!IX=A%:NEXTIX
   40VDU7:END
   50:
   60DATA &00A07085,&1D207045
```

```
   70DATA &09349909,&20306918
   80DATA &C0CBFFE3,&A9EDD008
   90DATA &FFE3200D,&092CBE60
  100DATA &71257186,&01A903F0
  110DATA &6000A960,&10204080
  120DATA &01020408
```

Attention!

Unfortunately due to the sheer volume of submissions our returns department has been unable to cope satisfactorily. So, from now on we are requesting that you include a suitable stamped addressed envelope for return of your submission. Not enclosing a suitable SAE will mean that your program will not be returned. You have been warned.

The beneficial side of this system is that 90% of submissions will be returned within one week. A small price to pay for such a service I'm sure you'll agree.

With regards to future submissions we are looking for articles on programming in general, utility programs and applications software and lastly, good games. Here are a few types of program we don't want: Educational, hangman, pools predictors, mastermind, flashing borders, bank accounts, disc catalogues and clocks.

If you can't get a program listing in the magazine to work ring in to see whether it was faulty rather than writing. If there were problems then we'd let you know. Corrections normally appear a couple of weeks later. Thanks.

Duncan Evans
Technical Editor

with Kenn Garroch

Printing teletext on Spectrum

P M Johnston of New Malden, Surrey, writes:

Q I bought the Volex Teletext converter for the Spectrum through the PCW special offer and would like to obtain printouts of teletext pages. Unfortunately, my printer (a star DP 8480 operating via a Ramprint interface) is not able to operate ■ provide screen dumps.

The obvious alternative seems to be to save and then print the Ascii image of the screen which the Volex manual says exists in Ram.

I have tried to achieve this using the attached Basic program. The result is seemingly random characters. Could you please tell me what I am doing wrong?

A OK, first the cop out – without actually having a Volex to play with, I don't know if what I suggest will work However, I think the program you need is something like the example program shown below. It assumes that, as the manual says, locations 111 and 112 point to the buffer of the screen Image If this is wrong then try 23405 and 23406 (low hi). The range check (31<A<128) is to get rid of any of most of the fancy teletext characters. It won't get them all since the graphics control characters that turn the graphics on and off are >128 Generally, if a line starts with a value between 145 and 159 then ignore the line as it's probably full of graphics. It may be that there are no graphics codes, or different ones are used for the Spectrum. In this case, the example should give you ■ clue as to what these are by comparing it with the original

The program prints 30 rows or 32 characters ■ the screen To divert to the printer, use your printer driver routine instead of print Ignore the odd numbered lines since they are just comments

```
10 A=PEEK 111+256*PEEK 112
11 REM BASE ADDRESS OF RAM SCREEN STORE
20 FOR V=0 TO 29
21 REM ROW COUNT
30 Z$=""
31 REM ZERO STRING STORE
40 FOR X=0 TO 31
41 REM COLUMN COUNT
50 A= PEEK (((V*32)+X)+A)
51 REM GET CHARACTER FROM RAM
60 IF A>31 AND A<128 THEN Z$=Z$+CHR$ A
61 REM RANGE CHECK AND IF OK PUT IN STRING
70 NEXT X
71 REM NEXT COLUMN
80 PRINT Z$
81 REM PRINT THE ROW
90 NEXT V
91 REM NEXT ROW
```

Cautious about the ST

J Carney of Gateshead, Tyne and Wear, writes:

Q As I don't have much to spend I have decided upon buying an Atari ST rather than an STM or STFM. I am writing to you in case I make a drastic mistake. Is the ST fully compatible with all ST games?

Is it true that you have to load Gem before you load every game?

Can I connect it to my Granada portable with RGB without the use of a modulator? If I can, could you tell me how to make a lead?

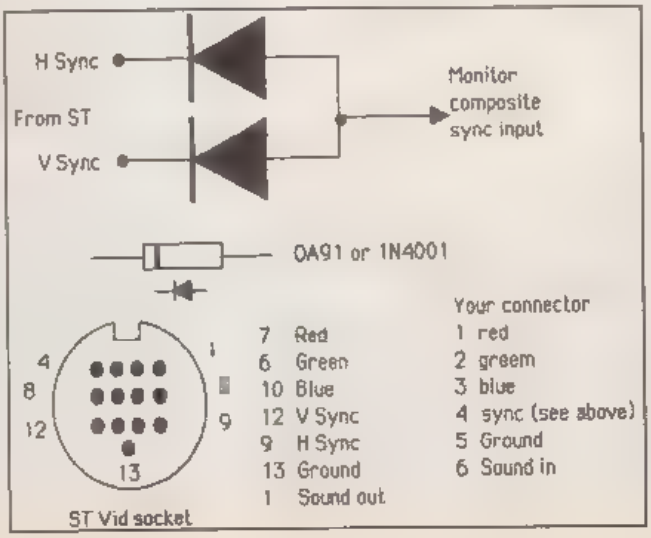
A As far as I can see, you would be better off buying the STM or STFM since the ST does not come with a disc drive The price of the STM (I can't find anyone selling plain old STs any more) ■ approximately £250 with the disc drive (360K) being an extra £140 or so. Prices for the STFM range from £380 to £390 so, it comes to about the same thing except for the STFM having the power supply built in (a big advantage)

The 520ST(F)(M) are pretty well the same machines with extras such as disc drives and modulators built in As far as the software goes, you will be able to run any software that uses medium or low res For high res you need either Atari's SM135 or an NEC Multi Sync (or any other multi sync monitor) Most games are written to run in low res with a few using medium Games in high res only are quite rare so until you are bored with the colour selection, don't worry about getting a high res monitor

All modern STs have Gem built into their Roms. It was only the first release models that had to load it in from disc, and most of these will have since been upgraded Commercial software generally loads from an autoboot file so that you don't actually see Gem (although it's probably still there) Those that don't are run by double clicking their icons, which is almost as fast

If your Granada RGB is standard RGB, ie, you have been using it with a BBC or Spectrum (plus adaptor) etc, then there is no reason why you should not connect it to the ST (see below). There are different kinds of RGB notably RGBTTL, which won't work. These are pretty rare, and the chances are, unless it specifically says so, the Granada is compatible with the ST

The diagram below shows two diodes to be used to connect the H and V syncs together



Setting up with Amstrad

Dave Nash of Stevenage, Herts, writes:

Q I am in the process of buying an Amstrad CPC6128 and I have a few questions I would like to ask you.

Firstly, do you know where I can obtain public domain CP/M software in Amstrad format?

Also, where can I get older software such as *Manic Miner*, etc, which I have for my Spectrum but doesn't seem to still be available for the Amstrad.

A You might try the CP/M user group PIP, at 28 Gordon Mansions, Torrington Place, London WC1E 7HF They should be able to help with the *Manic Miner* software If not, then try the Amstrad Groups Federation, 4 Sutton Road, Gorton, Manchester M18 7PN

The only places I can think of to get older software is to contact the original software houses In cases where this is not possible, try the small ads or some of the larger software shops, they may still have some in stock. If you cannot get hold of them then they have probably become collectors' items and you won't be able to get them

By the way, please don't send your offers of software to me, place a small ad instead.

Headaches and division

Terry King of Harlow, Essex, writes:

Q I have been learning machine code for some time now and one thing that still stumped

me was a quick method of doing division. When I saw *Popular*, July 3–9, I was pleased to see just what I was looking for.

However, the routine only allowed an 8 bit divisor, but I need a 16 bit divisor so that I could do division such as 60000÷500. I tried mucking around with the routine but all I got was a headache. Can you tell me how the routine works, and how to convert it to do larger numbers?

A The routine below works by trial subtraction and the basic outline is: To divide num by divisor with the result in res and remainder in num: Set counter to number of bits in divisor loop: jump back here later; multiply res and num by 2 (shift left 1 place); check whether divisor can be subtracted from high word/byte of num (this depends on the size of the numbers but generally, the number of bits in divisor is half the number in num so compare

num nnnnnnnn nnnnnnnn (not necessarily 16 bits)
divisor dddddddd (not necessarily 8 but is half the length of num)

If this is negative then skip the next step. If this is positive then actually subtract it and add one to res. Decrement the counter by one. If non-zero then go to loop. res now holds the result of the division – num holds the remainder in its high section.

The idea is to shift the result and divisor left one place, then subtract the divisor from the high half of the number. If the result is positive then add one to the result and put the result of the subtraction into the high half of the number and count down. If the result of the subtraction is negative then just count down. The number of times to count is the same as the number of bits in the result (and divisor). To actually make this work for a 32 bit number divided by a 16 bit number, the Z80 code is shown in the example below. It is probably not the best way of doing it but it does work, which is what matters – I'll leave it up to you to refine it.

```
; Divide the 32 bit number in NUM by the 16 bit number in DBY leaving a 16 bit result in RES
DBIV    LD      B,16        ; Set counter for 16 bits
        LD      A,(DBY)     ; Get divisor
        LD      E,A
        LD      A,(DBY+1)   ; Both bytes
        LD      D,A
DNXT    LD      HL,NUM      ; Point to number
        SLA     (HL)        ; NUM times 2
        INC     HL          ; it might be better to do this in registers
        RL      (HL)        ; the trouble is that extending the idea
        INC     HL          ; further then becomes problematical
        RL      (HL)
        INC     HL
        RL      (HL)
        INC     HL          ; now points to RES make sure they're next to each other
        SLA     (HL)
        INC     HL
        RL      (HL)        ; So this is shifted as well
        LD      HL,NUM+2    ; Point to high word for NUM
        LD      A,(HL)      ; Get low byte
        SUB     E           ; Trial subtract low
        LD      C,A         ; Save this since it may come handy
        INC     HL          ; Point to high byte
        LD      A,(HL)      ; Get it
        SBC     A,D         ; Do the subtract
        JR      C,DNCT      ; Borrow so is negative
        LD      (HL),A      ; +ve so replace high byte
        DEC     HL
        LD      (HL),C      ; and low (it did come in handy)
        LD      HL,RES      ; Address of res to HL
        INC     (HL)        ; Add one to res
DCNT    DJNZ    DNXT        ; Dec count and do next
        RET                 ; Result in res rem in num both 16 bits

NUM     DEFB    #60,#EA,0,0 ; 4 bytes 32 bits to be divided low byte first (60000)
RES     DEFB    0,0         ; 16 bit result low first
DBY     DEFB    #F4,1       ; Divided by this (500) # used for hex
```

The double dabble

J H Stevens of Warrington, Cheshire, writes

Q I have just started computing as a hobby, and am trying to get to grips with programming. One thing I don't understand is the different numbering systems such as binary and hexadecimal. I was never very good at maths so I would be grateful if you could explain this side of programming to me in a simple fashion.

A I can but try. All number systems are just different ways of representing actual values. The quantity is the same, it is just the representation that is different.

The first thing you need to understand is the idea of powers. When a number is multiplied by itself, it is said to have been squared and raised to the power of two. For example, 2×2 is 4 which is 2 squared and is written as 2^2 which means to the power of two 2 to the power of 4 is 2^4 and equals 16, ie, 2×2×2×2 (to belabour the point, 2×2=4, 2×4=8 and 2×8=16)

Any number can be raised to a power, eg, 3^5, but there are a couple of rules for the two cases where the powers are 0 and 1. If a number is raised to the power of 1 then the result is the same number, eg, $2^1=2$ and $10^1=10$, and if a number is raised to the power of 0 then the result is 1.

Bearing the above in mind, consider the number system that is most common, that based around ten. Here, numbers are made up out of the series of characters, 0123456789. Take 123 (one hundred and twenty three in decimal). This can be written as: $(1\times10^2)+(2\times10^1)+(3\times10^0)$ which is 1 times one hundred plus 2 times 10 plus 3 times 1. Remember that $10^1=10$ and $10^0=1$. Here the *base* is said to be ten (10). Consider counting up to eleven. The characters (figures) 0123456789 are counted through for the first digit and after 9 this digit is reset to 0 and the next digit to the left has 1 added to it. One is then added to the first digit to get 11 or eleven. There are ten possible characters in all since the base is ten. This may sound obvious but it is necessary to explain other systems.

The most common numbering system used in computers is using base two. Here, for four digits, the powers will be 2^3,2^2, 2^1 and 2^0. Since 2^0 is one, and 2^1 is two, the only possible characters are 0 and 1. So, counting up to four we have 0, 1, 10, 11, 100, ie, add one to the next digit when you get to two for the current digit, then set the current digit to zero. There were ten characters in base ten, and so there are two characters in base 2 (0 and 1). Looking at it another way, the binary number 1010 can be written $(1\times2^3)+(0\times2^2)+(1\times2^1)+(0\times2^0)$ which, in decimal, is 8+0+2+0 or 10.

Binary (base 2) is very handy in computers since microprocessors and their memories work in ons and offs, ie, two states 1 and 0.

The other common base for computers is hexadecimal. Here the base is 16 – hex is 6 and decimal is 10 (incidentally, duodecimal is base 12 and octal base 8). In hexadecimal, or hex for short, there must be 16 characters; however, the most common numbering system (anywhere?) only supplies ten characters for use as numbers. To get around this, ABCDE and F are used for the extra five. This gives us the 16 characters, 0123456789ABCDEF, needed. As before, powers are used and the first four digits are 16^3, 16^2, 16^1, 16^0. Take the number FE20 in hex, this can be written $(F\times16^3)+(E\times16^2)+(2\times16^1)+(0\times16^0)$ and converting to decimal $(15\times16^3)+(14\times16^2)+(2\times16^1)+(0\times16^0)$ which is $(15\times4096)+(14\times256)+(2\times16)+(0\times1)$ which is 65056 in decimal.

The advantage of hex is that it is easy to convert to it from binary and, hence, is a good method of representing large binary numbers, eg, a 16 digit binary number reduces to a four digit hex number since FFFF hex is 1111111111111111 in binary. The conversion is done by grouping the binary number in blocks of four starting from the right – the least significant digit (that raised to the power of 0).

For example

1010110010011111 is a 16 digit (16 bit) binary number)

Grouping this in fours

1010 1100 1001 1111

Each group is a number from 0 to 15 (1111 binary is 15 in decimal – $(1\times2^3)+(1\times2^2)+(1\times2^1)+(1\times2^0)$ or 8+4+2+1)

Hex is also handy for referring to bytes, nibbles and words. A byte can be represented directly as an 8 bit binary number which in hex would be a two digit number. A nibble is four bits and hence one digit in hex, and a word is two bytes giving 4 digits. Note that converting from hex to binary is simply a matter of reversing the substitution process shown above. Converting from decimal to hex can be done with a method known as double dabble.

GREETINGS FROM MICROMOUSE

David Wallin with reviews of some of Micronet's top galleries – including one which appears to be run by a squeaky mouse!

This week we're taking one of our regular looks at some of the features offered by Micronet 800, including MicroMouse, the galleries, Interlink and, inevitably, a quick look at *Shades*.

Galleries are proving very popular with almost 200 now available. A number of them are *Shades* galleries, but the topics of others range from the Starship fan club through to satellite television.

Each gallery is a series of frames which a user can 'buy' from Micronet. Each user may have one page, consisting of up to 26 frames, each costing 99p per three months to reserve and 1p each time you edit it. As some galleries are proving very popular, Micronet is considering offering them free to 'editors'.

Initially, I did not favour galleries as they seemed expensive. However, I decided to look into them in a bit more detail and set up my own. It is called the Musictel Plus Information gallery and consists of three pages of information on Musictel Plus BB. It is not the best of galleries and is totally textual – it was done as a test of the facility. Having edited a gallery, I can see why so many exist. When you set one up for just a few pounds a month, you have a 'magazine' with a potential readership of thousands. One gallery may route to a few other galleries at the touch of a button and so many link through to each other.

A facility which I suggested to Micronet is some form of route to mailbox pages or ideally response frames. At present, the editor's mailbox number is displayed in the top left and it's a matter of writing it down, keying *77# and then entering it. Micronet have said they will look into response frames as they will greatly improve galleries.

Another form of Gallery is the PBM (Play By Mailbox) gallery. These are similar to play by mail games but are much faster due to the speed of e-mail.

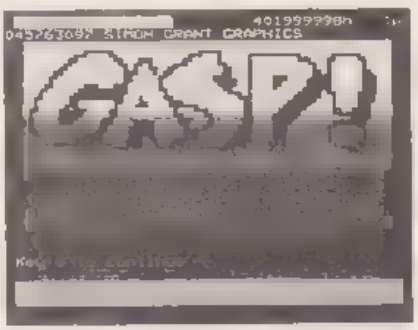
There are a few PBM galleries for adventure games, but most are for various sports, from hockey to darts. PBM also includes *Starnet* inspired games, trading games and a few others.

A common type of Gallery is the BB gallery. Designed to introduce 'netters to a BB sysoped by the editor (or exhibitor). These are popular but generally are not updated more than once a month.

Finally there are the 'others'. These range from the graphically outstanding GASP! to the informative 'Four Things You Didn't Know' gallery. The best way to understand galleries is really to look at some.

The gallery menu can be found on page 81122 and the gallery guide on page 81122078. Below I've suggested ten you might like to head for first, which I found particularly interesting.

Gallery	Editor	Page
GASP	Simon Grant	811220043
Daily Nanjusi	D RowBottom	811220075
Phantom	Keith Burton	811220031
The Vigilante Shades Alliance	Nick Fine	811220093
TOSHTEL	J McIntosh	811220118
The Completely Mad Galah	A & M Knell	811220155
The 3W newspaper	Keddy	811220163
PC1512 Technical Board	C Meanly	811220186
Clever Glogs The Programmers Galah	E Robinson	811220193
Four Things You Never Knew	C Foster	811220209



Next, on a computer news section of Micronet, with an editor with the odd name of MicroMouse, commonly known by the even odder Skweeky. He runs the PC News column and a very excellent general computer news section – Daily Smalls. The daily smalls actually are pretty much daily with updates between 4 and 7 times a week.

Skweeky literally 'skweeks' the news at you mousifying many words. I have been referred to as Mouse Pal Dave Wallin. Mailboxing Skweeky is 'squeeking back', new becomes noo', phone number becomes datalion. The style is very similar to that on the Microgmome BB where many words are given a gnomish touch (Microgmome viewdata 01-888 8894).

The mouse can be reached on page *MOUSE# or option 29 from frame 800b (Micronet's what's new). Although it uses what many people might consider a childish style it is very informative, accurate and interesting.

Recently in this column, Steve Gold gave his thoughts on the InterLink gateway. While I agree with Steve about the gateway, my prime complaint is the request for a # at the end of each screen meaning that mail cannot really be prepared off-line. I use the gateway to check by mailbox and if there is any new mail I log on via the London Direct Dial number (01-583 xxxx (where xxxx = speed 3000 - 300/300 1275 - 1200/75 and 1200 - 1200/1200) and download it properly. Generally, I prefer my Microlink mailbox though it is a bit more expensive.

Interlink does not charge a monthly subscription been waived and reports from Micronet suggest that it may never be introduced. The new Telecom Gold charges worry many users, and journalist Surya has calculated an increase of 570% for some users, but we'll have a full breakdown of the new charges as soon as possible.

Finally, a quick look at *Shades*. *Shades* has been undergoing many changes recently, one being the ability to select which of the eight games you are put on to. Anyone who, like me, has tried to get on to the same game as a friend knows how hard it can be and I'm sure the new facility will help many users.

For new users, here's the answer to the first riddle. Find Moat's bank yourself (it's very easy). Then go: S S S W SW NW N NE S SE E. Then dig in the sand.

Shades is improving regularly with many new features popping up.

THE ENVELOPE PLEASE

Mark Jenkins announces the winners of the Soundcheck anniversary competition, and offers advice and answers to readers' letters – including much information on the Casio CZ-range synths.

As promised last week we get under way with the results of this column's birthday celebration competition. If you recall in the 52nd column we offered the following awards: a free ticket to the AMP Records day of synth and computer music for the first person to tell us who recorded *Computer Experiments Volume 1*; a copy of *The AMP Records Compilation Album* with loads of music in a similar vein for the first person to send in any Midi-based demo; and a copy of *Electronic Music On The Commodore 64* for the first person to send in a C64-based demo of any kind.

First up is Mr McCormick of Barrow, who hit the nail on the head with Larry Fast, who goes under the stage name Synergy and who played keyboards on most of Peter Gabriel's albums. Fast's half-a-dozen albums are now available on the Audion label distributed by Capitol, and very good they are too.

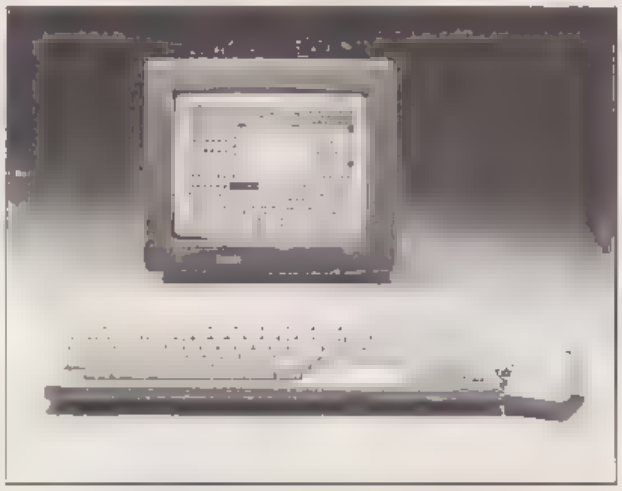
Mr McCormick suggests we review some Midi link and thru boxes; a good idea, since they simplify even the most basic Midi/micro setups. For anyone else interested in the concept, it's in The Logan Hall, 20 Bedford Way, London WC1 (Russell Square tube) on Saturday August 8, the first of eight synth bands gets under way at 1.30pm; and micros featured include Apples, Amigas and Ataris.

Next up is A King of Wembley, who has sent in a piece called *Fun March* composed on a Yamaha DX7, Casio CZ101, ARP2600 analog synth with trigger convertor, Vesta MD1 interface, Yamaha QX5 sequencer, SCI Drumtraks drum machine and Yamaha RX21L Latin Percussion machine.

A nice little piece with a good beat and clear recording quality, but a couple of weird things about it. Firstly, it's not a march at all – it's a calypso, with much emphasis on the Latin percussion and steel drum-type sounds. Secondly, it doesn't use a micro *anywhere* – my mistake, I should have asked for micro-and-Midi-based demos I suppose. Still, keep them coming in.

Lastly, Paul Preston of Peterborough who has sent a C64 (Music Expansion System/Sound Sampler/Com-Drum) demo tape and a letter, each of such staggering length and complexity that it would take a whole column to go into them. However, we'll try to take up some of the points raised over the next few weeks.

Now on to more assorted letters. J Burrows of Stevenage writes: "I have a Casio CZ230S synth and would like to know how to write over the last four memories with external Midi data; I have a C64 and a Midi interface but suppose I need some software. The American magazine *Keyboard* has lots of ads for patches on tape or data sheets – would these be of any use to me? And could you tell me where to get information on the other CZ keyboards?"



Casio editing with *CZ-Android* on the ST

First things first. There are several Casio editing packages about, at least one designed for the C64, and this comes from Joreth Music. Most of the other CZ synths have a memory buffer for editing but the CZ230S does not since you can't normally edit the machine anyway. Instead you have to use one of the four available memories temporarily (number 99 is memory serves correctly) and the patch created is stored on the synth. You can regain the original patches using a special procedure on power-up.

Americans seem to need more help than we do in programming synths; if you do try a few American data sheets or tapes (those from Deep Magic are supposedly quite good) they'll probably give you an idea of whether you could do better yourself very quickly. Editors such as *CZ-Android* or Soundbits *Voice Master* (both from Syndromic Music) on the Atari ST will make up new sounds for you to perfect at your leisure.

As for information on the other CZ synths – basically they all sound the same. The CZ-101 and 1000 are programmable and lack the drum machine facilities of the CZ230S but are basically the same animal. The CZ3000 and CZ5000 play split and layer sounds, the 5000 also having a sequencer, and the CZ-1 adds velocity and pressure sensitivity.

But the days of the CZs are probably coming to an end now, with Casio concentrating on US new, up-market £1,600 FZ-1 sampler/synthesiser. Any good music shop will be able to show you full catalogues and price lists.

PC users will be pleased to know that *K-Minstrel*, first launched on the Atari ST, is now available for their machine. Manufacturers Kuma describes the package as "a musical composition and display editor designed to enable the user to compose and edit music quickly and easily".

Music can be composed on the screen using a mouse, and the package uses the Gem graphics environment born on the ST. An Epson EX80 compatible printer can transcribe up to 3200 chords from memory and slurs, triplets, accelerandos and crescendos can all be included.

The new *K-Minstrel* sounds very much like the original version, with the exception of the fact that you have to spend more cash if you want to connect up to Midi equipment either for note entry or for playback. While the software is only £29.95, the interface is £195, but without it you're limited to the single channel internal sound chip. With Midi you can play back on four, eight, 12 or 16 channels and use a programmable channel select for each musical line.

We'll be taking a detailed look at *K-Minstrel* in the near future.

Next week, I look at all the best software from the British Music Fair.

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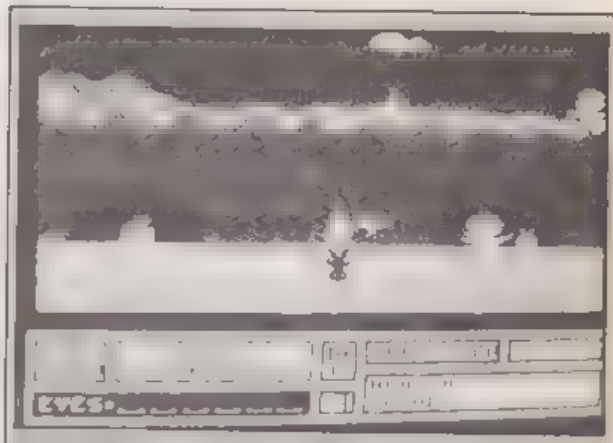
Program *Buy-Byte Compilation* **Type** Compilation **Price** £7.95 (BBC disc) **Supplier** Bug Byte, Victory House, Leicester Place, London WC2H 7NB.

continued on page 43 ▶



US outfit Datasoft seems to make a habit of games in the fantasy role-playing mould, such as its *Alternate Reality* series *Black Magic* is in a similar fantasy vein, although it is more of a conventional arcade adventure than an RPG.

You play the Apprentice of the last surviving magician in the land of Marigold, a land ruled over by the evil warlock, Zahgrim. You know that there is only one way to overcome Zahgrim, and that is by locating the six Eyes of Anakar. To do this you will have to wander across the land, collecting spells, freeing Zahgrim's prisoners and fighting his evil servants.

The main part of the screen display is given over to a scrolling landscape across which your figure can run, climb, jump and duck, as necessary. As you move around the landscape, exploring forests and underground caves, you'll be besieged by man-eating plants, trolls, bats and other deadly creatures. To combat these you'll need to locate supplies of arrows, spell-bearing scrolls, and food to boost your health rating. The graphics of all the moving figures are a bit primitive, but this doesn't affect the action at all, and things can get pretty frantic at times.

The rest of the screen is a status display, showing your experience points, stocks of spells and arrows, and your health rating. You gain experience points as you complete various tasks, and as you increase your experience you are allowed to use more powerful spells against your enemies.

There are only a couple of minor points that could be improved upon; one is the speed with which your food supplies run out. This leads to a lot of games that end very suddenly because you may not have been able to find the randomly placed items of food. There are also some messages that flash onscreen at certain points, and when these come up the game stops for what seems like ages, leaving you sitting there waiting for things to get going again. But despite this, and the rather simplistic graphics, *Black Magic* is another enjoyable fantasy romp.

Cliff Joseph

Program *Black Magic* **Type** Arcade Adventure **Micro** C64 and Amstrad CPC **Price** £9.95 tape, £14.95 disc **Supplier** US Gold, Units 2/3, Holford Way, Holford, Birmingham B6 7AX.

SUPER POWER

All this super power summitry and Star Wars controversy must be getting contagious. Either that, or it's good for publicity because all of a sudden we've got two nuclear wargames being released by companies that are more well known for their arcade games.

High Frontier and *The Armageddon Man* both deal with scenarios in which the player is in control of an orbiting satellite defence system.

There are differences between the two games, though. *High Frontier* is quite openly set in the present and based upon the idea of America's Strategic Defence Initiative (SDI, or Star Wars).

You play the part of the SDI project leader, responsible for allocating resources and deploying various satellite systems.

The gameplay is based around a map of the world, with satellite paths marked by small white dots. Around the borders of the map is a series of icons representing the components of the satellite systems. These also show the government departments, whose activities have to be co-ordinated in order to mount an effective defence. These include research and development, espionage and reconnaissance, SDI command, and even a hotline from the president, the one person to whom you are answerable.

Given the nature of the scenario it's not surprising that 'the enemy' is represented by Russia, but the game isn't so simplistic as to imply that the Russians are all fork-tailed devils and that the West is full of guys in white hats.

The opening menu allows you to select Soviet leaders and US presidents of different types, and it is possible to select a scenario on which the president is a right wing 'hawk' whilst the Soviet leader is a peaceful 'dove'.

But whereas *High Frontier* depicts a 'them and us' scenario, *Armageddon Man* deals with a more complex situation.

Set in the early 23rd century, the game anticipates the existence of no less than 18 patterns or groupings with nuclear capabilities. The activities of these groups are monitored by a network of satellites under the control of a single supreme commander – you.

A diplomatic crisis and a view of the world in *Armageddon Man*

Your primary task is to regulate the political and economic links between all these groups, attempting to reduce friction between them and to avoid the possibility of war breaking out. Even a war between two minor powers can lead to escalation and all-out nuclear war, and even if that doesn't happen a limited engagement could still release enough radiation to poison the entire atmosphere.

Your main means of preventing this is by diplomacy, sending advice, messages of support or economic aid where it is needed. But your diplomatic influence depends on the soundness of your judgement, and if you constantly ignore requests for aid from a particular nation you shouldn't be surprised if it doesn't pay much attention to your advice at other times.

Like *High Frontier*, *Armageddon Man* is controlled by a series of icons positioned around a map of the world. In the first game, the number of icons and secondary screens that you have to deal with can seem quite confusing until you have played a few games and become familiar with the system.

On the other hand, because *Armageddon Man* is potentially more complex (with 16 nuclear powers to deal with), the control system has been kept simpler.

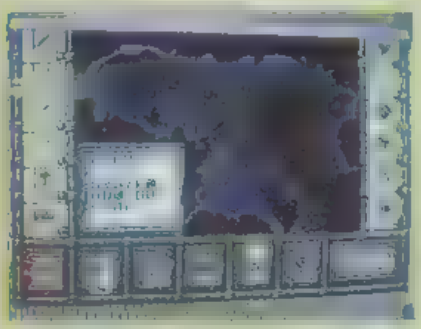
Here, you only have five main icons to deal with, representing satellite deployment, movement of troops, national information, radio communications, and an in/out tray which displays diplomatic messages sent to you, or by you to others.

Because of this, the two games play quite differently even though they may look very similar in their screen displays. *High Frontier* has the more cluttered screen of the two, and will probably take longer to play as you have to think quite carefully about balancing expenditure, deploying forces and so on.

These factors are also present in *Armageddon Man*, but the game moves more quickly and creates more of a sense of urgency because of the simpler control system.

However, being simpler makes it less realistic and slightly less mentally challenging. So, if you're looking for something that will really test your judgement, go for *High Frontier*. But if you want a faster-moving game then opt for *Armageddon Man*.

Cliff Joseph



Research and development for Star Wars in *High Frontier*

◀ continued from page 41

Four games (*Skyhawk, Tennis, Star Force Seven* and *Plan B*) together on one disc ■ reasonable value, I suppose, but there's no getting away from the fact that these old Bug-Byte titles are all pretty dated.

Program *Warcry!* **Type** Adventure **Price** £2.99 **Supplier** Arena Software, 12 Cawdor Crescent, Boston Manor, London W7 2DD.

BBC Master Series

Program *Brix Bat* **Type** Arcade **Price** £4.00 **Supplier** MW Soft, ■ Kingsland Road, Aylesbury, Bucks HP21 9SY

Breakout/Arkanoid clone for the Master 128 only

Commodore 64

Program *Guild of Thieves* **Type** Adventure **Price** £19.95 (disc only) **Supplier** Firebird, 64–76 New Oxford Street, London WC1A 1PS

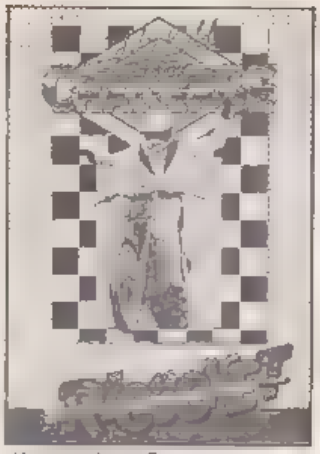
Magnetic Scroll's excellent graphic adventure, now available for the C64

Program *The Living Daylights* **Type** Arcade **Price** £9.95 **Supplier** Domark, Domark House, 22 Hartfield Road, Wimbledon SW19 3TA

Program *Eddie Kidd's Jump Challenge* **Type** Simulation **Price** £1.99 **Supplier** Mastertronic, 8–10 Paul Street, London EC2A 4JH

Program *Lazer Force* **Type** Arcade **Price** £1.99 **Supplier** Codemasters, 1 Beaumont Business Centre, Beaumont Close, Banbury, Oxon

This one claims to be three games in one, which ■ stretching things a bit since a different screen doesn't necessarily make a different game



However *Lazer For[illegible]* a good shoot 'em up for the price

Program [illegible] **Type** Arcade **Price** £1.99 **Supplier** Codemasters, 1 Beaumont Business Centre, Beaumont Close, Banbury, Oxon

Another victim of the umpteen games in one syndrome but another good budget title. This one combines zapping with bit of maze exploring as well

Program *Jackie and Wide* **Type** Arcade **Price** £1.99 **Supplier** Mastertronic, 8–10 Paul Street, London EC2A 4JH

IBM PCs and compatibles

Program *Profit Maker* **Type** Integrated Accounts Package **Price** £286.00 **Supplier** Camsoft, Unit 2, Maenofferen, Blaenau Ffestiniog, Gwynedd, Wales

Program *TRIMbase 1.5* **Type** Database **Price** £78.22 **Supplier** Talent Computer Systems, Curran Building, 101 St James Road, Glasgow G4 0NS

Upgraded version of Talent's data management system

continued on page 45 ▶

I was a dark and stormy night (as a famous beagle once wrote) and things were stirring beneath the hallowed halls of academia known as GUE, the George Underwood Edwards Institute of Technology, one of America's foremost learning centres.

With mere hours to go before your term paper is due, the campus computer network goes berserk, trashes your files, and starts spewing gibberish about sacrifices, blood, and weird rites.

A friendly backer examines your workstation and informs you that the source of the problem appears to be the alchemy lab.

A lesser student might start re-writing. But it's a boring subject, and a walk around will be a welcome distraction. And there's the question of the strange symbol-carved stone in your hand, the remnant of what you thought was just a nightmare.

***Lurking Horror* is, without doubt, the most spine-chilling adventure yet from Infocom but how spine-chilling that is depends on your imagination.**

It's certainly the most deadly. While many adventures settle for frustrating the player, *Lurking Horror* kills at every opportunity. Turn off your flashlight in a dark location and – bam! Something will get you.

Among the foes to be outsmarted are the wicked-toothed flying creature, the zombie maintenance man, and a horde of rats.

***Lurking Horror* creates a tense, fear-charged atmosphere with lots of attention to background detail, masses of puzzles of varying difficulty, and a number of questions to be answered.**

What is the professor of alchemy up to? Why did his star student commit suicide? What nameless horror lurks in the muddy tunnels by the river? And what unspeakable deeds have been committed on the blood-stained altar deep below the campus?

Not least, how are you going to finish your essay before breakfast?

One of Infocom's best, but definitely not for the novice adventurer. And if you're too nervous to watch *Psycho*, don't play *Lurking Horror* alone at night.

Peter Worlock

Program *Lurking Horror* **Type** Adventure **Micro** (disc only) C64, Atari ST, IBM PC, Apple II **Price** £24.99 **Supplier** Activision, 23 Pond Street, London NW3 2PN.

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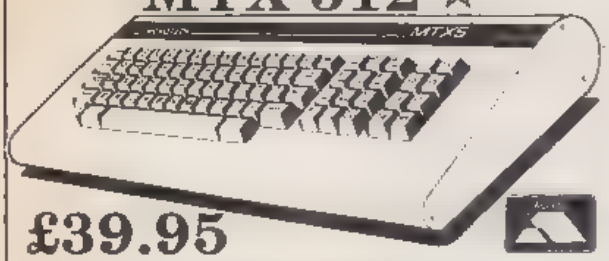

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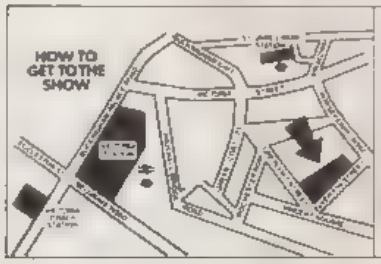

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◀ continued from page 43

MSX

Program *Eddie Kidd's Jump Challenge* **Type** Simulation **Price** £1.99 **Supplier** Mastertronic, 8–10 Paul Street, London EC2A 4JH

Program *Rasterscan* **Type** Arcade **Price** £1.99 **Supplier** Mastertronic, 8–10 Paul Street, London EC2A 4JH

An interesting budget arcade adventure with a distinctive style of graphics. A game that's slightly out of the ordinary.

Sinclair QL

Program *Small Trader's Pack* **Type** Application **Price** £24.95 **Supplier** SD Microsystems, PO Box 24, Hitchin, Herts

Two-microdrive package containing a variety of programs for small-business use, including accounting, stock control, mailing list and other programs.

Spectrum

Program *Dr Destructo* **Type** Arcade **Price** £1.99 **Supplier** Mastertronic, 8–10 Paul Street, London EC2A 4JH

A very simple aircraft combat game, much like the games that came with early video consolas. Silly, pointless, but quite fun because of the rather cartoonish graphics.

Program *Mission Jupiter* **Type** Arcade **Price** £1.99 **Supplier** Codemasters, 1 Beaumont Business Centre, Beaumont Close, Banbury, Oxon

Program *Boulder Dash 2* **Type** Arcade **Price** £2.99 **Supplier** Prism Leisure Corp, Baird Road, Enfield, Middlesex EN3 1SJ

Program *Warcry!* **Type** Adventure **Price** £2.99 **Supplier** Arcana Software, 12 Cawdor Crescent, Boston Manor, London W7 2DD

Budget graphic adventure, available by mail order.

Program *Eddie Kidd's Jump Challenge* **Type** Simulation **Price** £1.99 **Supplier** Mastertronic, 8–10 Paul Street, London EC2A 4JH

Re-release of an old Martech title. It's a fairly simple but enjoyable game, jumping your bike over rows of cars, and not bad at all at its new budget price.

Program *Last Mission* **Type** Arcade **Price** £8.99 **Supplier** US Gold, Units 2/3, Holford Way, Holford, Birmingham B6 7AX

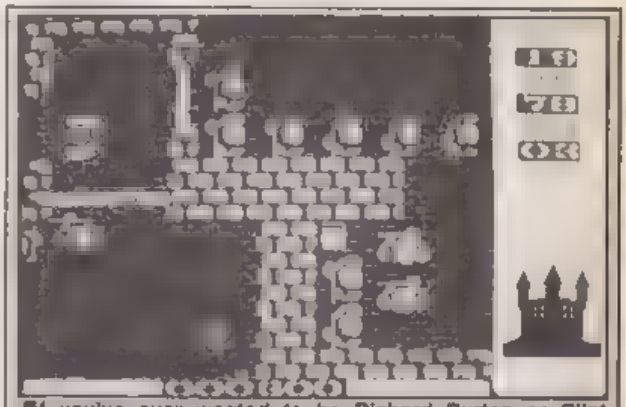
Yet another con-op shoot 'em up conversion. But not one of the best I'm afraid.

Program *Convoy Raider* **Type** War game **Price** £7.99 **Supplier** Gremlin Graphics, Alpha House, 10 Carver Street, Sheffield S1 4FS.

A change of style for Gremlin, a strategy game rather than arcade action. Defend your coastline.

Apologies are due to Ariolasoft, Robico and Martech because we published the screen shots of their games in the wrong order last week.

The picture on p41 was of *Pile Up!*, not *Catch 23*. The one on p43 was *The Hunt*, and the one on p45 was *Catch 23*.



If you've ever wanted to be Richard Burton or Clint Eastwood in the film *Where Eagles Dare* I imagine you've been getting frustrated. There aren't many Nazi-occupied castles around that you can go shooting up. Interceptor's *Eagles Nest* is obviously inspired by the film in the plot and gameplay department, but by *Dandy* (the game) in presentation.

***Eagles Nest* is a fortified castle perched atop a mountain, your task is to rescue the three-man sabotage team that failed to blow it up in the first place. And, of course, to trigger the detonators, there's one on each of the four floors, that will destroy the castle in one huge explosion.**

The graphics are presented from a top down view, and are large and attractive, if not, for the most part, particularly detailed. Moving around is based on a character system rather than by the pixel so intricate manoeuvres are out. While charging up and down the castle's corridors, squads of Germans seek to block your way. A couple of blasts from your weapon, of indeterminable type, and they are no more. There are a number of objects to pick up on your travels, including the lift pass, keys for the doors, art treasures, ammunition, food and first aid kits for healing the odd bullet hole, and finally the detonators.

Probably the most outstanding feature of *Eagles Nest* is the sample sound. Gunshots resonate in the corridors, doors clang metallically when unlocked, dynamite explodes violently when shot, and then there's the almost obligatory sampled music, and quite good it is too, on the title page.

There are a few faults with this conversion, the screen only scrolls when you reach the edge, and then by just one screenful. Also you cannot see any of the bullets that are flying around, so close attention needs to be paid to your health indicator.

All that said, it's still an enjoyable game, more so given the polish only the ST can offer.

Duncan Evans

Program *Eagle's Nest* **Type** Arcade **Micro** Atari ST **Price** £19.95 **Supplier** Pandora, Mercury House, Calleva Park, Aldermaston, Berks RG7 4QW

CHARTS

Top Twenty

1	(13)	World Class Leaderboard	Access/US Gold
2	(1)	Paperboy	Elite
3	(3)	BMX Simulator	Code Masters
4	(5)	Milk Race	Mastertronic
5	(6)	Run for Gold	Alternative
6	(4)	The Last Ninja	System 3
7	(2)	Barbarian	Palace
8	(8)	Four Great Games	Microvalue
9	(7)	Football Manager	Addictive
10	(9)	Gauntlet	US Gold
11	(11)	I Ball	Firebird
12	(18)	Leaderboard	Access/US Gold
13	(–)	Living Daylights	Domark
14	(14)	Six Pack	Elite
15	(–)	Head over Heels	Ocean
16	(–)	Konami's Coin-op Hits	Imagine
17	(–)	Tournament Leaderboard	Access/US Gold
18	(12)	Feud	Bulldog
19	(–)	Game Over	Imagine
■	(–)	Kik Start 2	Mastertronic

All figures compiled by Gallup/Computer Trade Weekly

Value for money?

There has been a lot of discussion over the last few months about the pricing structure within the computer games industry. There are two clear levels of pricing at the moment: the normal price of £8.00 to £10.00 and the so-called budget price of £2.00 to £3.00.

The argument which has arisen recently is whether the full price is justified for games or if the budget price reflects the true worth of a computer game. People now seem concerned that games publishers are pulling in too much money, and making an unfairly high profit from their games.

All games should be priced at the lower range is the view – pointing to the high quality games which have appeared in Mastertronic and Firebird's budget ranges. If games such as these can be produced at this price, then there is no excuse for other software houses to charge more.

The major point these critics of high prices seem to forget is the difference between the types of game you are buying for that higher price. I don't mean that all high-price games are good and the budget games are all trash. Far from it: there are more or less equal numbers of good and bad games in both the budget and non-budget ranges. But there is a difference in style and approach in programming the two types of games.

The budget game when it first appeared was simply an old game brought out under a new name, on a new label and given a new lease of life. Most of the games weren't very good – they didn't have to be: the novelty of pricing and some very impressive marketing sold them.

When the old games ran out, and it was realised that you could sell games at less than £2.00, new games were produced at that price. The standards of programming and graphics went up, in many cases reaching the level of full-price games, and indeed surpassing some of them. However, one feature of the budget game remained. Behind all the graphics, the fancy programming tricks and the colourful packaging – the concepts remain the same. By their very nature, budget games are not innovative – they do not set out to be.

When you buy a budget game, you are looking for good game play, some flashy graphics maybe, and not a lot more. For your £2.00s, you don't expect innovative techniques or stunning new systems of gameplay – and you don't get them. In some ways, the budget releases are the Amstrad equivalent of the computer games field – it delivers a safe, well-tested format in a good package.

The full price game should offer more for your £10.00. It should offer innovative gameplay, interesting ideas and new systems. You have a right to expect it for that amount of money, just as the software house should have a right to charge £10.00 to recoup their investment in that product. A complex, new game cannot be dashed off in the two months or so a budget game might merit. It takes time to develop the game format, to calculate how the game will fit together, and to try out new ideas.

The above is a generalisation, but not a particularly sweeping one. Obviously there are some interesting budget games – though none I have yet seen break the mould – and many full-price games do little to deserve their full price. The computer games player has a right to expect new forms of game and new forms of entertainment. How boring the market would be without the innovations which *Elite*, *Knight Lore* and *The Lords of Midnight* brought to it. Yet, could these games have been produced within a budget format? Of course not, and nor can the new innovations in gaming which yet to come. These new innovations will never appear if the budget game replaces all else.

Mike Lewis

Puzzle No 269

Illustrated here are 21 counters arranged in the form of a triangle. If we were to divide them into two groups of six and 15 numbers each of these groups could also be arranged to form smaller triangles.

If, instead of 21 counters, our large triangle comprised 231 counters, it could be formed into a triangle with 21 counters along each edge. However, this triangle could be split into two smaller triangles in two *different* ways: 153 (17) and 78 (12) or 210 (20) and 21 (6). In each case the figure in the brackets indicates the number of counters along each edge of the triangle formed.

It is also possible to find a larger triangle that can be split into pairs of smaller triangles in three different ways. But can you find a triangle of counters, the smallest possible, that can be divided in *four* different ways, each of which can be rearranged to form two smaller triangles?

Solution to Puzzle No 264

The digit used the most is the '1' which is printed 301 times. The digit used the least in the zero which is used just 192 times. (All other digits, 1 to 9 are used 300 times each).

In the program an array D(9) is used to keep a count of the number of times that each digit is used. Don't forget that such an array will store 10 values as D(0) is also included in the array.

Each successive number, from one to 1000, is generated in turn and is then converted to string format.

Winner of Puzzle No 264

This week's winner is Jonathan Hurley, of Ilford, Essex, who will receive £10.

Rules

The closing date for Puzzle 269 is August .

```
 10 DIM D(9)
 20 FOR N=1 TO 1000
 30 N$=STR$(N)
 40 FOR F=1 TO LEN(N$)
 50 V=VAL(MID$(N$,F,1))
 60 D(V)=D(V)+1
 70 NEXT
 80 NEXT
 90 FOR F=0 TO 9
100 PRINT F,D(F)
110 NEXT
>
```

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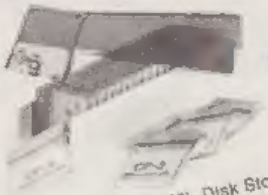

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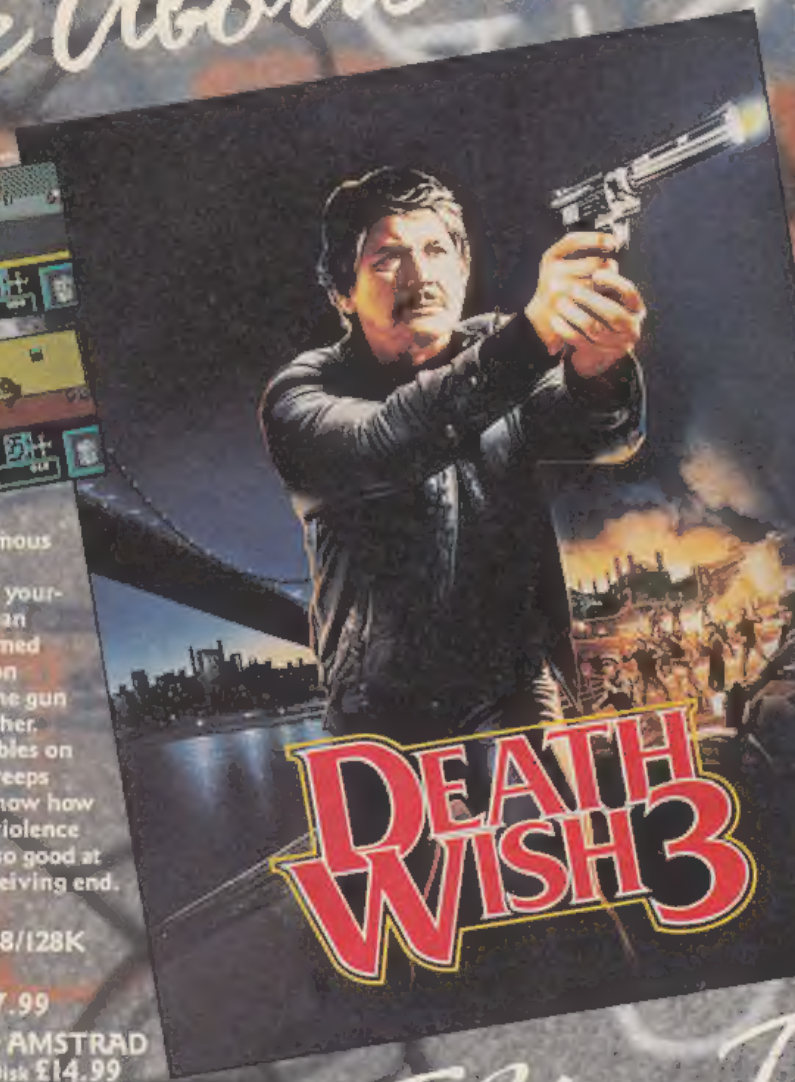

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